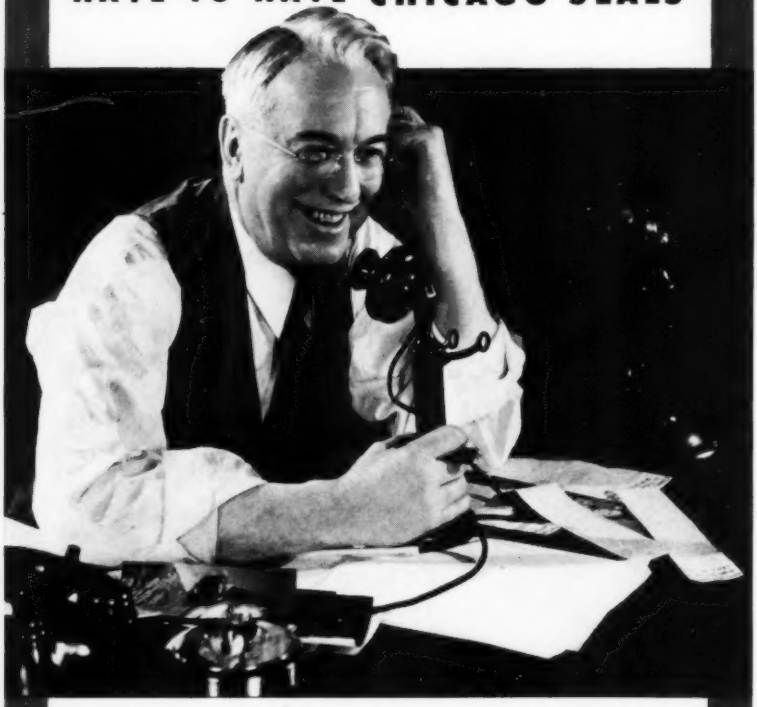
Refrigeration Service Engineer

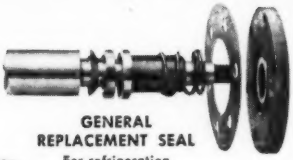
VOL. 13 NO. 7 ★ ★ ★ JULY . 1945

"YOU'RE LIKE ALL THE REST OF THE SERVICE MEN—YOU JUST HAVE TO HAVE CHICAGO SEALS"



CHICAGO VALVE PLATES

Only refrigeration compressor valve plates with removable valve seats. Save time and work. Sizes for most compressors.



GENERAL REPLACEMENT SEAL

For refrigeration compressors.

MODERN DESIGN

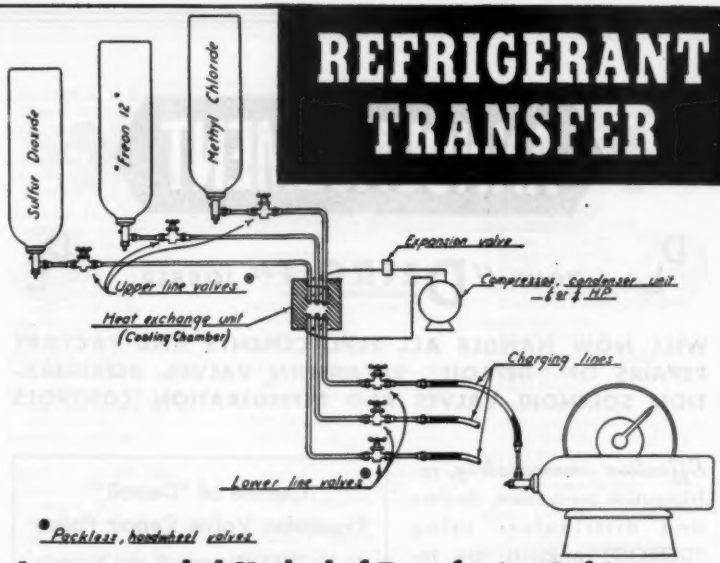
SOLD BY JOBBERS

CHICAGO SEAL CO.

20 NORTH WACKER DRIVE • CHICAGO 6, ILL.

THE REFRIGERATION SERVICE ENGINEER. Nickerson & Collins Co., Publishers, 435 N. Waller Ave., Chicago 44, Ill. Published monthly. Vol. 13. No. 7. July, 1945. Entered as second class matter March 4, 1938. Chicago Ill., under the Act of March 3, 1879. Subscription in the United States, $2.00 per year; all other countries, $3.00 per year.

REFRIGERANT TRANSFER



*Packless, handwheel valves

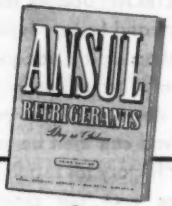
A recommended Method of Transferring Refrigerants

PRINCIPLE—Pressure drop is created by reducing temperature, and causes refrigerant to flow from supply cylinder to service drum.

1—MORE RAPID.
2—SAFER.
3—MORE ECONOMICAL.
4—CLEANER.

LIQUID Sulfur Dioxide BY ANSUL* LIQUID Methyl Chloride BY ANSUL*

*REG. U.S. PAT. OFF.



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(3rd Edition)

You will find this and other equally interesting refrigerant subjects thoroughly and authoritatively covered in this reference manual.

FOR REFRIGERANTS—SEE YOUR ANSUL JOBBER

ANSUL CHEMICAL COMPANY
MARINETTE, WISCONSIN
AGENTS FOR KINETIC'S "FREON-11," "FREON-12" AND "FREON-22"

ANNOUNCEMENT

YOUR "DETROIT" JOBBER

WILL NOW HANDLE ALL REPLACEMENTS AND FACTORY REPAIRS OF "DETROIT" EXPANSION VALVES, REFRIGERATION SOLENOID VALVES AND REFRIGERATION CONTROLS

Effective immediately, refrigeration servicemen, dealers and distributors using "DETROIT" products are requested to look to their "DETROIT" Jobber for replacement and factory repairs. These Jobbers carry adequate stocks should immediate replacement be necessary. The product involved can then be returned to our factory for repair in accordance with our repair policy.

Outline of "Detroit" Expansion Valve Repair Policy

All "DETROIT" Thermostatic and Automatic Expansion Valves are guaranteed for twelve months from the date of manufacture against defects in workmanship and material. Letters A, B, C, D, indicate the 1st, 2nd, 3rd and 4th quarters of the year. They are followed by the last two figures of the year. Valves older than one year may be repaired in accordance with our published repair schedule. Damaged valves repaired or replaced in accordance with a special price schedule. Repaired valves carry a new valve guarantee.

Your "DETROIT" Jobbers Are Listed Below:

ATLANTA, GA.
Lee S. Basarge Co.
Bowen Refrigeration Supplies, Inc.
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ALBANY, N. Y.
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ASHEVILLE, N. C.
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Foster Supply Co.
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Dobes & Co.
Refrigeration Supplies
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Henry V. Dick & Co., Inc.

COLUMBUS, O.
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United Refrigeration Co.

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Beckett Electric Co.
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H. J. Schroeder

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McKinley Refrigeration Supply Co.

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Arbell Refrigeration Supplies

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"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators.

It's the
PAR EXTRAS
that make the
BIG DIFFERENCE
PAR BY *Lynch*

Compare the PAR Condensing Unit line and you will quickly see why Par enjoys such unusual popularity in the refrigeration field . . . note the Par *Extras* that make the big difference. These sturdy built, compact units have many outstanding features of construction that make for extra years of economical, efficient operation . . . streamlined in design and manufactured as complete condensing units, not an assembly of parts bolted together . . . and a complete range of models and sizes from 1/6 h.p. to 2 h.p. air-cooled units and 1 h.p. to 5 h.p. water-cooled units.

See these units at your PAR Jobber . . . ask for complete details on Par *Extras* or write for illustrated Par catalogue R-96 and supplement R-96A.

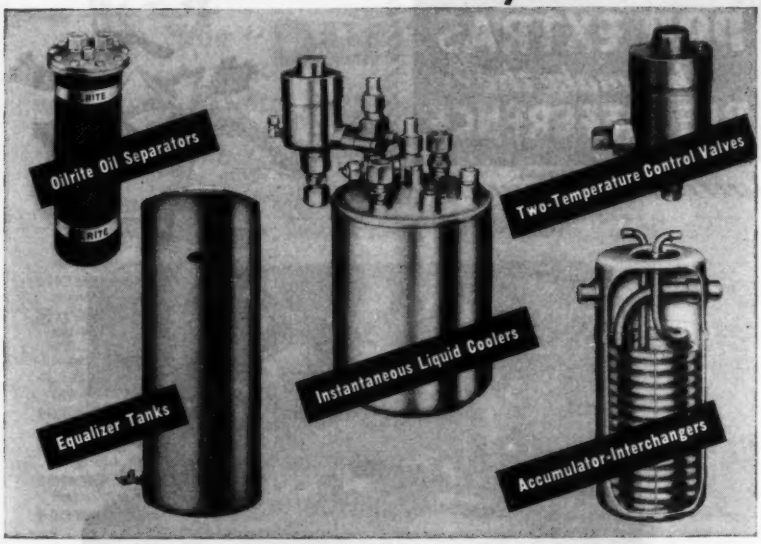
PAR—Condensing Unit Line sold exclusively through Franchised Refrigeration Supply Jobbers!

. . . . By Comparison — You'll Buy PAR

PAR Lynch DIVISION

Manufacturing Corporation, Defiance, Ohio U. S. A.

AVAILABLE *right now!*



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for the replacement of defective equipment

DEALERS. Here's an opportunity for you to sell replacement equipment to those companies that are classified as essential

With increasing breakdowns of refrigeration equipment, industrial plants are now ready to buy new accessories for their existing equipment

ATTENTION DEALERS

Write today for literature on Temprite's complete line of refrigerating accessories, beverage coolers, water coolers and other allied products.

Temprite's complete line of refrigeration accessories and their applications are:

INSTANTANEOUS LIQUID COOLERS—For cooling water, light oils, alcohol, brines, acids and caustics.

OILRITE OIL SEPARATORS—For keeping oil out of low-side evaporator coils, thereby improving operation and increasing system capacity.

TWO-TEMPERATURE VALVES—For maintaining constant temperatures on all types of evaporators.

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TEMPRITE PRODUCTS CORP.

Originators of Instantaneous Liquid Cooling Devices

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IMPERIAL TRIPLE-SEAL FITTINGS

The Flare Fitting that remains LEAKPROOF even when the seat has been badly nicked or marred

The Imperial Triple-Seal Flare Fitting brings you new, extra protection against leakage in refrigeration tubing connection work.

This fitting is the same excellent SAE refrigeration type Flare Fitting you have used before *except that it has an important improvement.* It is made with a groove in the seat. When the flare is drawn up against this groove the copper tubing is extruded into the groove making a tight, self-seating joint. This joint will remain leakproof even though the face of the seat may be badly nicked or marred.

This extra seal of safety is of greatest importance in refrigeration work because it gives you Triple-Seal tightness in every joint. And remember, Imperial Triple-Seal Fittings cost no more than ordinary fittings.

THE IMPERIAL BRASS MFG. COMPANY, 534 South Racine Avenue, Chicago 7, Illinois

IMPERIAL

FITTINGS • VALVES • DEHYDRATORS • FILTERS • FLOATS • CHARGING LINES • TOOLS FOR CUTTING, FLARING, BENDING, COILING, PINCH-OFF AND SWEDGING

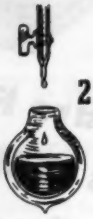
Service Engineers Should Know . . .

"VIRGINIA" METHYL CHLORIDE IS REALLY LABORATORY TESTED

— the content of each and every container — large or small — is analyzed 3 separate times.

BOILING POINT TEST

1. A measured sample from each cylinder must be water-white in color and when boiled to dryness must record within 25/100 of 1 degree a constant boiling point of minus 23.8°C. This test detects unwanted hydrocarbons, dirt and oil impurities.



ACIDITY TEST

2. The acid content in a sample of known weight must not exceed 6 parts per million; low acidity prevents copper plating and oil sludging.

MOISTURE TEST

3. The moisture in a sample of known weight must not exceed 80 parts per million; — low moisture prevents freezing at expansion valve and refrigerant break-down.

The name "V-METH-L" on the cylinder is your guarantee of quality. Sold by refrigeration supply jobbers everywhere.

VIRGINIA Smelting Co.

WEST NORFOLK, VA.

76 BEAVER ST., NEW YORK 5 :: 131 STATE ST., BOSTON 4

Agents for Kinetic's "Freon-12" — "Freon-22" — "Freon-11"

Customer: *"What's going on here?"*

Clerk: *"They're gay because the New Kelvinator Condensing Unit keeps them fresh and happy."*

For 30 years Kelvinator's superior engineering and craftsmanship . . . superior designing and manufacturing skill have resulted in condensing units with more dependability . . . more economy . . . more performance. Progressive service men know this . . . and *always* specify Kelvinator.

Kelvinator distributors and zone offices stock a complete line of refrigeration supplies. See them for your installation material such as valves, controls, dryers, etc.

Kelvinator

DIVISION OF NASH-KELVINATOR CORPORATION, DETROIT

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99.5% PURE . . DRY . . UNIFORM . .

DU PONT

Artic

METHYL

CHLORIDE

for your refrigeration

HIGH-PURITY Du Pont Methyl Chloride meets your every requirement.

ORDER AS YOU NEED IT, but don't stock up!

RETURN EMPTIES PROMPTLY—Your co-operation in returning empty cylinders will help speed deliveries to you and others. E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

KEEP ON BUYING WAR BONDS!

DU PONT METHYL CHLORIDE SPECIFICATIONS

Purity	99.5% Methyl Chloride
Moisture	0.008% by wgt. max.
Acid as (HCl)	0.001% by wgt. max.
Residue on Evaporation	0.01% by wgt. max.
Boiling Range (760mm)	—24.6° to—23.6°C.
Color	water white, clear

DU PONT ELECTROCHEMICALS

DUPONT

BETTER THINGS FOR BETTER LIVING

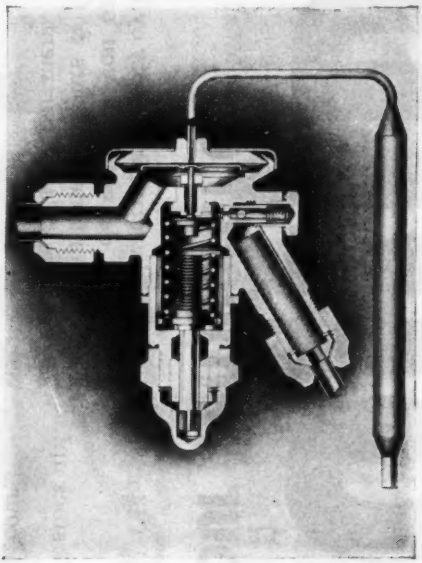
. . . THROUGH CHEMISTRY

General Controls

V-200 Thermal Expansion Valve

The following features combine to form a valve unsurpassed in sensitivity and dependabiliy.

- **Readily** removed orifice cartridges eliminate necessity for stocking several sizes for low tonnage installations.
- **Carefully** lapped hard-faced ball insures positive tight shut-off.
- **Thoroughly** field tested for freon, methyl chloride and sulphur dioxide.
- **Frictionless** single pusher pin assures dependable valve operation.



SPECIFICATIONS

Factory set superheat at 10°F.

External adjustment—Internal equalizer—External bulb—5 ft. capillary—Bulb clamp adaptable ⅜" to ¾" O.D. tubing—Integral filter—Wear resistant valve—Interchangeable orifice cartridge insures proper sizing of valve to installation.

GENERAL CONTROLS
801 ALLEN AVENUE GLENDALE 1, CALIF.

FACTORY BRANCHES: PHILADELPHIA • ATLANTA • BOSTON • CHICAGO • DALLAS
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YOU CAN'T AFFORD TO MISS!
● PEERLESS OF AMERICA is getting ready to announce new products and designs in Refrigeration and Air Conditioning Heat Exchange Equipment. The show you have been waiting for is scheduled for performance, now that restrictions on manufacture have been eased. We are getting ready to release to you details about our new designs and products. This IS the big show! Pent-up demand in the market will bring on the big crowds!
For this show to be a success we must have your correct mailing address so that we can keep you informed of our new products. To place your name on our mailing list, simply fill out the coupon below and mail today.
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Yes, I want a front seat for the show when PEERLESS introduces new products and designs. Please place my name on your mailing list for information concerning them.
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AMERICA
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Sleuthing with . . .

Trace is introduced into all refrigerating systems . . . old, new and reconditioned . . . for the prompt detection of existing leaks or the spotting of slowly developing future leaks as soon as they occur. Trace imparts a vivid red color to the oil and refrigerant, which appears as red stains at the points of leakage.

SUPERIOR QUALITIES

- Trace can be used with all refrigerants
- Trace is extremely penetrating
- Trace is non-corrosive
- Trace will not affect the refrigerant or the lubricating properties of the oil
- Trace will not form sludge
- Trace is thoroughly dehydrated

TRADE PRICES

4 oz. bottle (48 bottles to a case)	$ 1.00
1 pint bottle (24 bottles to a case)	$ 3.00
1 quart container (12 containers to a case)	$ 5.00
1 gallon container (6 containers to a case)	$16.00

Save 10% on case lots

For tough-to-spot Refrigerant Leaks

HIGHSIDE C

195 VERONA AVE. NE

The Fight against MOISTURE

"HOW DRY I AM"

In the case of this young man, a bounce of prevention is worth many a trounce of cure.

For the "young" refrigeration unit, moisture prophylaxis is infinitely better than subsequent dehydration. TZ will do it either way, but the wise engineer prefers the preventive technique to the curative.

• A TINY AMOUNT •
• A BIG JOB •
• SMALL COST •

THAWZONE
Fully Protected by U. S. Patents
The PIONEER FLUID DEHYDRANT

E. CHEMICALS CO.
NEWARK 4, N. J.

The Moving Dehydrant

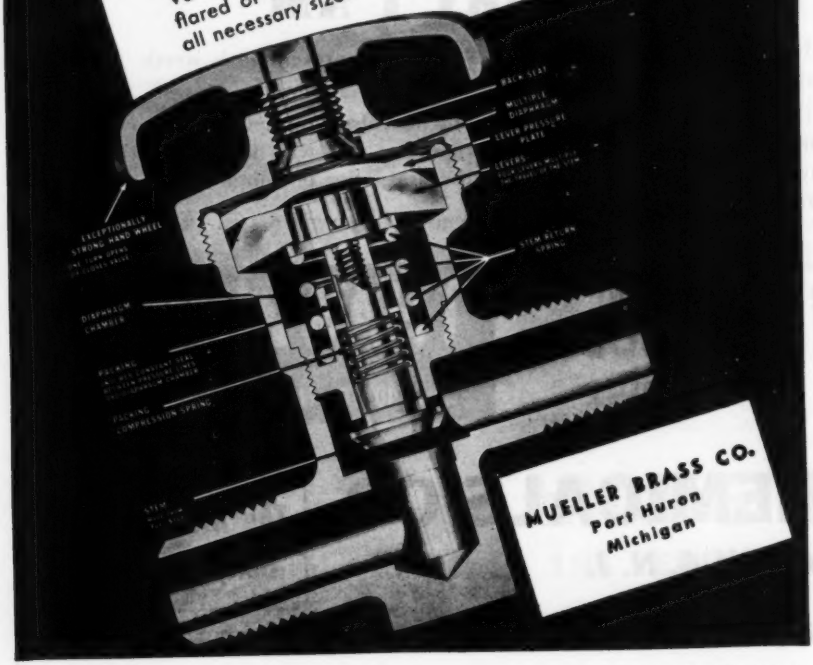
Increased Diaphragm Life

PROLONGS THE SERVICE LIFE OF THE VALVE

Our TRIPL-SEAL DIAPHRAGM VALVES are constructed upon a new and revolutionary principle involving a minimum of movement. The greatly increased multiple diaphragm is never deflected past its normal center; thus giving it much greater service life. It provides positive sealing at three essential points. The valve has positive and easy closing provided by a single turn of the hand wheel.

Body and cap are of seepless forged brass; maximum mounting strength is provided.

Valves are furnished in two way and angle type—flared or solder type ends, and a complete range of all necessary sizes.



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The Refrigeration Service Engineer

Vol. 13 No. 7

July, 1945

A Monthly Illustrated Journal Devoted to the Interests of the Refrigeration Service Engineer in the Servicing of Domestic and Small Commercial Refrigeration Systems

Official Organ
REFRIGERATION SERVICE ENGINEERS SOCIETY

The Cover

Increased use of refrigerated trucks for transporting perishables portends future possibilities for the refrigeration service man in maintaining this mobile equipment. Story on page 54.

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HOW TO CHANGE VALVE CAPACITY ON THE JOB...IN TEN SECONDS!
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IN THIS ISSUE—

Additional Government rulings affecting the refrigeration industries are summarized, starting on page 22. Loosening up of priorities due soon, priorities assistance for manufacturers of mechanical refrigerators, production materials for newcomers, are some of the high lights.

More information on going into business is continued in this issue. The topic in this article points out the value of planning the shop arrangement for the sales appeal and efficiency for getting the business and handling repairs. Harry Busby, the author, has had many years of experience along this line. Turn to page 26.

The design factors of the sealed commercial hermetic unit are discussed in the article by Carl Olin on page 30. This will be of interest to refrigeration service engineers who recognize that these units will show substantially increased use in the near future. Besides giving a good idea of the construction features of these units, Mr. Olin offers some very practical service ideas.

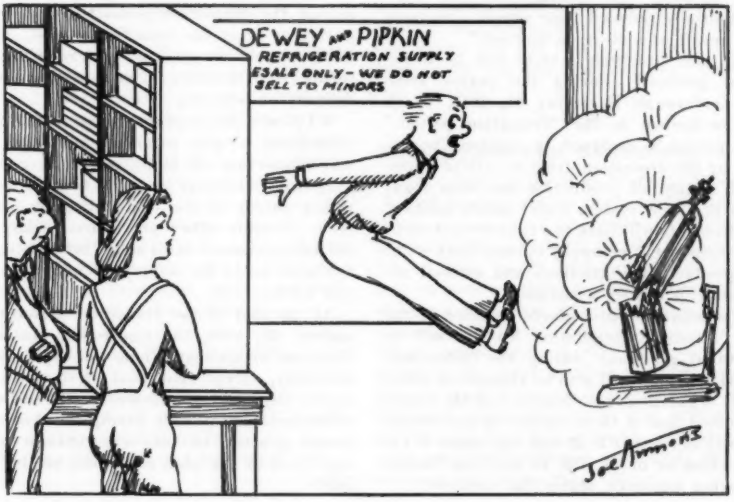
Service diagnosis charts for correcting troubles that occur in the Coldspot are included in this, the eighth, article containing information published in the Coldspot service manual. The article starts on page 35.

Questions that may have been troubling you as they have others are answered in the Question and Answer Section starting on page 39.

The Service Pointer Section is full of information and suggestions for both shop repairs and field service. This information has been submitted by readers who are anxious to help others improve their methods. Turn to page 46 for the idea you have been looking for.

Recognizing the major contributions made by war agencies and other national organizations to wartime problems of the refrigeration repair industry, the National Refrigeration Service Council gave a luncheon at the Statler Hotel, Washington, D. C., recently. Details on page 56.

Well! Look what Don learned to do while he was in the Army



Government Bureaus—*News and Rulings*

RULINGS and announcements issued by the various Government Bureaus that are of general interest to the refrigeration service industries are summarized below. Only the essential facts are given in most cases, and those who desire further or more complete information on any specific regulation or announcement are advised to write the proper Government agency.

Discontinuance of Priorities Forecast for Civilian Production

DETAILS of a revised and simplified priorities system leading to ultimate discontinuance of priorities assistance for "virtually everything except military requirements" as soon as war-supporting and essential civilian production no longer needs general help, were announced June 30 by J. A. Krug, Chairman of the War Production Board.

Mr. Krug announced a six months' transition period from July 1 to December 31, 1945, to "give business an opportunity to adjust its operations to the new system," which will go into effect after January 1, 1946.

Mr. Krug said transition to the revised and simplified priorities system was necessary because "the military services have substantially reduced their supply programs as a result of victory in Europe."

The new priorities system will be introduced gradually during the period from July 1 through December 31, 1945, which will be known as the "transition period." This period is designed to cushion the impact of the transition from a system under which nearly all production has been regulated to a new system under which military requirements will have top priority but civilian business will generally operate both without production restrictions and without affirmative priorities assistance.

Meanwhile the procedures outlined in the new "Priorities Regulation No. 29" will be instituted gradually during the latter half of 1945. There will also be changes in other WPB regulations and orders, and the board cautioned that if there should be any inconsistency between PR 29 and any other WPB regulation or order, PR 29 controls "unless the other expressly states the contrary."

Under the new priorities rating system the present AA rating method and the Controlled Materials Plan will be discontinued at the end of 1945 and replaced by a system in which the AAA rating will still be assigned in emergencies as under existing procedures but a new MM rating will be assigned by military agencies. WPB itself will assign the MM rating only in cases where it is clearly necessary for the war effort or for requirements of similar urgency.

During the transition period from July 1 to December 31, the MM rating will be equivalent to AA-1. The AA ratings also will be retained for certain materials, such as textiles, if it is not practicable to adapt existing controls to the new system.

Beginning October 1, 1945, no more AA ratings will be assigned by WPB or other agencies except for deliveries to be made before January 1, 1946. Prior to October 1, 1945, WPB will cancel outstanding AA ratings calling for delivery after the end of 1945, whenever this can be done without interfering with war production or war-supporting activities. Further details on this phase of the transition will be announced later.

Beginning as soon as possible after July 1, 1945, the military services will assign the MM rating to orders and contracts placed during the transition period for deliveries during or after the transition period. They also may change existing orders with AA ratings to MM ratings if necessary to assure delivery on schedule.

WPB will, if necessary, provide additional procedures to give priorities assistance for war-supporting or highly essential civilian purposes. This may be in the form of a new rating junior to the MM rating or in the form of some other procedure. This will not be announced until more information is available as to the supply of materials for non-military use.

At the end of the transition period, December 31, 1945, the Controlled Materials Plan and all its regulations will expire automatically, except that part of it which restricts inventories. However, the delivery of controlled materials during the third and fourth quarters of 1945 will continue to be regulated by the plan alone and not by ratings.

Priorities Assistance for Production of Mechanical Refrigerators

PRIORITIES assistance for the acquisition of material for third-quarter production of 255,702 domestic mechanical refrigerators has been granted to date to twelve manufacturers, WPB has announced. A balance of materials remains, sufficient for the production of 9,298 units in the third quarter. In granting priorities assistance to refrigerator manufacturers, WPB issues allotments of controlled materials (steel, aluminum, and copper) and permits them to use an AA-3 preference rating on orders for other materials and components.

It is emphasized that all the domestic mechanical refrigerators that can be made in the third quarter are expected to be added to the frozen stockpile, and will be released by WPB only to meet military, hospital, and other highly essential requirements. Distribution restrictions (Limitation Order L-5-d) will not be relaxed until production is high enough to insure fulfilment of these requirements. No refrigerators are expected to be available to the general public through normal retail channels until the beginning of 1946. The present and potential scarcity of materials has led many to believe refrigeration may not be generally available until quite late in 1946.

The following domestic mechanical refrigerator manufacturers have been granted priorities assistance for the production of specified quantities of refrigerators:

Frigidaire Division, General Motors Corp., Dayton, Ohio	56,445
General Electric Co., Erie, Pa.	47,501
Nash Kelvinator Corp., Grand Rapids and Detroit, Mich.	27,825
Seeger-Sunbeam, Evansville, Ind., and St. Paul, Minn	25,639
Servel, Inc., Evansville, Ind	20,272
Norge Division, Borg-Warner Corp., Muskegon, Mich.	14,369
Westinghouse Electric Corp., Mansfield and Springfield, Ohio	21,068
Philco Corp., Connersville, Ind.; Chicago, Ill., and Tecumseh, Mich	12,000
Crosley Refrigerator Co., Richmond, Ind.	11,067
Gibson Refrigerator Co., Greenville, Mich.	8,974
Admiral Corp., Connersville, Ind., and Tecumseh, Mich.	7,952
Ranney Refrigerator Co., Greenville, Mich.; Sidney Ohio; and Tecumseh, Mich.	2,500

Limited Priority Assistance for Manufacturers for Last Half of 1945

POLICIES in accordance with which limited priorities assistance (preference ratings and allotments) may be granted for civilian production materials in the United States and Canada during the third and fourth quarter of 1945 are set forth in a regulation issued July 2 by the WPB.

The new regulation, Priorities Regulation No. 28, explains the general policies that WPB will follow in granting priorities assistance for the third and fourth quarters of 1945. It also lists a number of special instances in which individual aid may be granted certain manufacturers.

During the two-front war, WPB gave "general" priorities assistance for production of certain non-military products at the minimum level required for essential civilian use. This included an allotment of controlled materials (steel, copper and aluminum) and a preference rating of AA-3 or higher for substantially all other production materials.

Program levels established for the third quarter and any that may be established for the fourth quarter will generally be no higher than previous levels established for the two-front war, the order states.

"General" priorities assistance will not be granted for manufacture of civilian products that, prior to May 1, 1945, were completely forbidden by limitation (L) or materials conservation (M) orders. The only specific exceptions that have been made to this policy are for limited numbers of refrigerators, washing machines and commercial aircraft.

S S S

No Supplemental Allocations

THE policy of the War Production Board will be to grant no supplemental allocations of controlled materials beyond the levels already scheduled for the third quarter of 1945, except when absolutely necessary to assure needed additional production of items of highest urgency to the civilian economy, WPB said June 10.

This was announced, WPB said, in a move designed "to wean civilian industry away" from a dependence on Government allocations now that cutbacks in war production are freeing increasing amounts of materials previously needed almost exclusively for the war and war supporting efforts.

This means that the production of civilian items above the levels already approved for the third quarter will have to be made without priorities assistance and with materials bought on the "free" market.

S S S

Newcomers to Receive Production Materials

A CLARIFICATION of War Production Board policy with respect to newcomers to business and industry, including veterans, was issued July 1 by WPB as General Program Order No. 517, the agency reported, as a step toward assuring that newcomers will receive a fair share of production materials and production quotas. The order provides for the establishment or increase of exemptions, for new small users, from restrictions of limitation and materials conservation (L and M) orders, WPB said.

Hereafter, the board announced, applications for production materials or for production quotas will not generally be denied on the ground that the applicants were not previously engaged in that production. The order provides an exception to this in the case of certain materials if there are special circumstances that make it impracticable to follow this policy. At the same time, steps will be taken to establish reserves of certain materials to insure their availability.

Limitation and materials conservation orders will be loosened for the benefit of small users (including newcomers) as additional quantities of materials become available in the event the additional quantities are not sufficient to warrant complete elimination of controls, WPB said.

S S S

Ratings for Motor Repair

REPAIRMEN using the ratings assigned by Controlled Materials Plan Regulation 9-A or a service organization operating under Order P-126 may employ the ratings to get motors repaired, rewound or rebuilt if they are used in such household products as refrigerators, washers, oil burners, coal stokers, etc., in commercial refrigerating systems despite provisions of paragraph (f) (2) (iii) of Priorities Regulation 3, the War Production Board ruled June 22. The action was taken by issuing direction 5 to CMP Regulation 9A (Parts and Materials for Repairmen). Order P-126 governs material for emergency servicing of commercial refrigerating and air conditioning systems.

Production of Small Motors

PRODUCTION of fractional horsepower motors may increase to a total of 800,000 units per month by the fourth quarter of 1945, members of the Fractional Horsepower Motors Labor Advisory Committee were told at a recent meeting with War Production Board officials.

WPB said that for some time to come there will be a large continuing military demand for small motors, with the likelihood that for at least three to five years there may be a larger civilian demand for small alternating-current motors than the industry can probably meet. Steps are being taken to assure a supply of small motors as one of the important aids to reconversion.

Order L-341 is being retained, and will require continuous inventory reporting by those who use more than 450 such motors per quarter. Thus small users will be protected and should be able to fill their needs, WPB said. Order L-123, which required priority rating to place orders for fractional horsepower motors, has been revoked.

These small motors are needed as components for refrigerators, electric fans, washing machines, vacuum cleaners, oil stokers, various pieces of kitchen equipment, pumps, and many other products. It was estimated by WPB that the volume of production of fractional horsepower motors in peacetime will undoubtedly be much smaller than it has been at the wartime peak, even though more small motors than ever before in peacetime will be in demand.

S S S

Hand Tool Supply

AFTER August 1, producers of hand tools will manufacture a stated proportion of their output to fill unrated orders.

Beginning with the month of August 1945, and in each month thereafter, notwithstanding the provisions of par. 944.7 of Priorities Regulation 1, any producer may produce and deliver for unrated orders up to 25 per cent of his total monthly production of each kind of mechanics hand service tool. Of course, if the producer does not have enough rated orders for a given kind of mechanics hand service tool calling for delivery in a particular month to take up 75 per cent of his production, he may produce and deliver more than 25 per cent of his total monthly production for unrated orders in that month.

In view of provisions of the preceding paragraph which permit producers to set aside

a portion of their production for unrated orders, the War Production Board will no longer assign preference ratings on Form WPB-547 or Canadian Form PB-1010 to the delivery of mechanics hand service tools for distributors' stocks. All such ratings previously assigned will be cancelled August 1.

CONDENSING UNIT MANUFACTURERS APPEAL TO WPB IN RECONVERSION PROGRAM

THE removal of certain WPB Limitation Orders has led customers to expect immediate delivery of condensing units. Rated orders now on manufacturers' books prevent the early shipments desired.

Concern over this condition was expressed at the June 26th meeting in Cleveland of the Refrigeration Condensing Unit Manufacturers Assn., a product group of the Refrigeration Equipment Manufacturers Assn.

In the hope of inspiring clarifying action, the following letter was sent to Chairman J. A. Krug of the War Production Board by R. Kennedy Hanson, Executive Secretary of RCUMA.

"Members of the Refrigeration Condensing Unit Manufacturers Association at a meeting held in Cleveland, Tuesday, June 26, discussed the overall effects of the removal of various limitation and material orders which have controlled the production and distribution of refrigerating compressors and condensing units.

"Frankly, we are disturbed.

"Under Priority Regulations No. 25 and 27, we, as manufacturers, are committed to other producers who use condensing units as components These other manufacturers have heavy commitments for raw material of various types and other components such as coils and valves Without the condensing unit they will be unable to complete their assembly for sale to the ultimate consumer, or shipment to the field through their distribution channels. This could well result in great hardship on these producers and delay the reconversion program.

"Further to this, a large majority of the food distribution system has an AA-5 rating for repair and replacement equipment under CMP-5 and 5A. We also find that the field offices in processing WPB-1319's in the past, and presently WPB-541's, have assigned and are assigning AA-5 ratings in the majority of applications for new installations of refrigerated equipment. Thus, the food distribution system and other essential installations are on par with spot authorizations under PR-25, which also assigns an AA-5 rating to the condensing unit.

"Under Pri-Reg. 27, manufacturers producing less than $50,000 in volume per quarter, use an AA-4 rating. This immediately establishes a layer over the AA-5, which is building up in our production patterns—thus throwing the scheduled deliveries out of line in accordance with operations under Priority Regulation No. 1.

"We understand that a new regulation is under consideration to up-rate 'bottleneck components' to an AA-3. With the relaxation of the various limitation and material orders, and the shortage of components, such as fractional horsepower motors, fin and tube condensers, and compressor body castings for our complete assembly, we find a backlog of orders carrying ratings which is becoming exceedingly unmanageable.

"The shortage of these components are all natural breaks on our production which we are unable to expand to absorb the increasing demand. In view of these natural breaks, we urge consideration of the following:

a. A direction to Priority Regulation No. 1 to hold AA-5 ratings under Pri-Reg. 25 in line so as to insure scheduled deliveries being met.

b. A re-examination of the field processing instructions to the War Production Board regional offices, allowing uprating of past individual ratings, and the issuance of a minimum AA-3 to insure these individual requirements being met.

c. The establishment of a new rating between AA-1 and AAA which would over-ride the present AA-1 ratings to insure proper identification of and quicker delivery of military orders.

"The issuance of the direction suggested above in '*a*' would definitely be of great assistance to all holders of spot authorizations under Pri-Reg. 25. Incidentally, this, we understand, will affect some 80,000 units of production.

"We will appreciate very much your consideration of these suggestions, and wish to assure you that they are only made in an effort to be helpful."

It was the unanimous opinion of the attending representatives of RCUMA that the adoption of this program was essential to smooth out the problems of reconversion in its preliminary stages.

So You Want to Get into Business for Yourself

By Harry D. Busby*

THE old axiom that you must walk before you run holds true in any business enterprise you may enter, but a walk to one man may be running to another because of a difference in financial position, the productivity of the location, or the opportunities presented in starting.

Small Beginning Possible

It is possible to start a refrigeration service business with little more than a kit of tools, a car and a basement or garage to work in, plus $150 or $200 in cash. The going, of course, will be tough and you will not eat too well for the first two or three months but it can and has been done. From such a small beginning, you will undoubtedly grow and regardless of how much money you had to start or what size business you began with, you will eventually wish to equip a repair shop and it is then you will be confronted with such questions as: What kind of a repair shop should I have; how shall it be laid out and what equipment will I need for it?

These are difficult questions to answer directly and it is probable that any layout or plan offered through these pages would not quite fit your needs. There are, however, certain fundamental rules and considerations which should act as a guide irrespective of the size, shape or location of the repair shop. Such things as safety, good lighting, fire hazards, protection against damage to or theft of equipment under repair must all be considered, but the greatest factor of all is the determination of whether your service business is to be merely the "necessary evil to sales" or whether you intend to build it up into a money maker.

If sales is your principle source of business with only sufficient service to maintain your sales, you will not want to place too much emphasis on a service shop and we need not discuss it any further. If you plan on building up your service and expect it to make money for you, even though you are also engaged in sales, your shop should be given just as much prominence and careful consideration as a sales show room because that is exactly what it should become.

One of the best salesmen of service work is a clean orderly efficient looking shop to which you can proudly invite your prospective customer and show him your method of operation and the manner in which his equipment will be handled. This is particularly true of those larger customers such as apartment house owners, real estate managers, chain store operators and others who control a larger number of refrigerating systems. Before contracting with you to handle their service work, they will want to know if you are reliable and firmly established. An efficient clean looking shop will do as much to convince him as anything else you can say or do.

Many service shops give too much prominence to the office space, hoping apparently that their customer will not want to go any further because their shop hidden away somewhere behind the office is anything but pleasant to look at. Offices are seldom very impressive or interesting. They are too common and it is probable that your customer has a nicer one than you can provide and is not easily impressed. Your shop can and should be both impressive and interest-

ARTICLE VII.—SHOP LAYOUT

This series of articles serves not only as a "check quide" for established operators, but contains some real pointers for those contemplating starting their own service business. An efficient, well arranged shop, no matter how small, is indicative of good business management. This installment discusses this important subject in an easy to understand manner.

* Associate Editor, Refrigeration Service Engineer.

ing and it does not require a lot of fancy equipment to do it. It may not be interesting to a service man who has seen a lot of shops but it can be to your customer. A good coat of paint on any shop fixture will immediately enhance its appearance 100%. It is recommended then that the shop be placed in full view of the entering customer, while the office be placed in some quiet corner where the customer may be taken after he has seen what you have to offer.

If you are engaging in a sales and service business, and a sales room is to be included in the layout, it is not always possible to give equal prominence to both the sales room and shop. In such cases, it is evident that the sales room must come first. However, the opportunity of giving an equal break to both is often overlooked and the service business and perhaps sales through service, suffers accordingly. The layout shown in Fig. 1 is an example of how both can be given an equal break even in some smaller stores where there is considerable show window space.

Stock Rooms

No matter how small the service business, except where no parts are kept in stock, an enclosed space designated as a stock room will pay dividends. Where no means of storing parts on shelves, in bins or other segregated arrangements are provided, there are too many parts that become soiled, damaged or lost. The stock room does not have to be more than a wired in enclosure and can usually be placed in an obscure out of the way place, easily accessible only to those engaged in the shop.

The stock room should be equipped with metal or wood shelves and bins for the larger parts, hooks and racks for such items as belts, wiring and tubing. An arrangement such as shown in Fig. 2 for the small nuts, bolts, screws, fittings, switch parts, etc., is both economical and convenient. You need only save the larger size cans that the family vegetables come in and arrange them in a rack as shown. Be sure though that the cans are large enough to get your hand in them when reaching for parts.

Storage Room

Most important to a clean orderly shop is a dead storage room which should be located out of sight somewhere in the back of the building. This room should be totally enclosed and provided with a door. It is a place where all the old refrigerators, condensing units, evaporators, condensers, compressors and other miscellaneous equipment awaiting eventual repair can be hidden away out of sight. Such a room will eliminate the unsightly piles of old equipment stacked against the walls or lying around the floor of the average shop. It will transform the place of business from a junk shop to a repair shop in the eyes of your customer. Shelves for compressors, motors, evaporators, etc., and large bins for cold controls, expansion valves and other controls can be provided around the walls.

Selecting Your Equipment

Selection of the proper equipment of the service shop will be governed largely by your financial position when starting, the kind of work you will do, such as hermetic, domestic or commercial. The plan of operation—i.e., whether you will repair such major parts as compressors or send them to the factory, and how near you are located to centers of supply which in turn will determine whether you must be prepared to repair many parts or replace most parts.

A very common type of refrigeration service business found in or near the larger cities, where there is easy access to sources of supply and such auxiliary repair services as motor repair and compressor repair, contains practically no shop equipment. The owners or operators, often scornfully referred to as "the parts changers," are those who have started on little or no cash and have continued to operate without reinvesting any of their earnings in their business. There are both advantages and disadvantages to this kind of operation. A car, a kit of tools and a small work bench with a vise on it located in their basement or a corner of their garage is the limit of their equipment. They hang out their "shingle," so to speak, by selecting a company name and having their home 'phone listed in the telephone directory under that name. Unless the repair can be made on the customers premises, they repair no parts, nor do they stock any parts. A small supply of two or three kinds of refrigerant, a can of oil, a few spare fittings and perhaps a belt or two are carried in the car for immediate use. If other parts or assemblies are found defective, the customer is sold on the necessity of buying a new one.

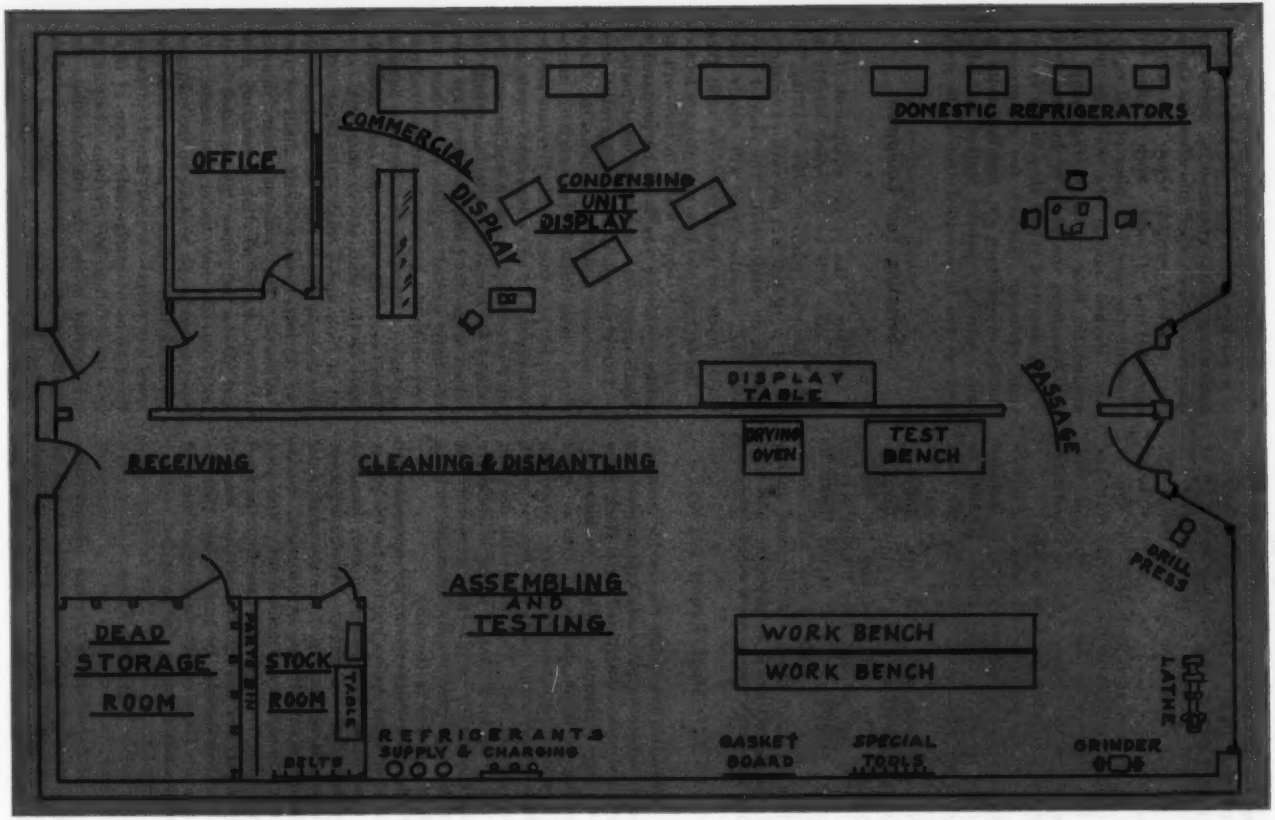
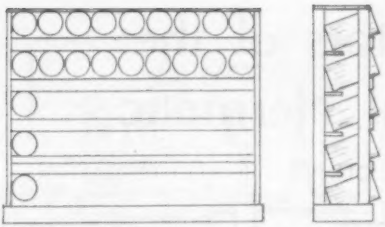


Fig. 1. A floor plan layout for shop and salesroom where both are given prominence.



PARTS BIN MADE OF TIN CANS

FIG. 2

The service man then goes to the nearest refrigeration supply jobber, picks up the part, returns to the customers premises and installs it. His is a job mainly of selling and installing. No records or accounts are kept of earnings or expenditures and little attention is paid to business management.

Repairs Limited Without Shop

These men make a very good living when times are good and a rather poor one when the going gets tough. The advantages of this method of operating are low investment and operating cost, a minimum of work in business management and a minimum of responsibility. It is a method to be recommended to the man starting out with very limited capital, but the business should be broadened and developed at the first opportunity if you intend it to grow and support you in the years to come.

The disadvantage of this type of business operation is that it is almost entirely limited to the belt driven domestic refrigerators which are becoming fewer every year. It is more seasonal than the wider scope of operation because as soon as telephone calls begin slowing down, there is nothing in the shop for repair on which to take up the slack time. The larger and more profitable installation and rebuilding jobs cannot be handled because of a lack of equipment. It can never earn more than a living for the owner.

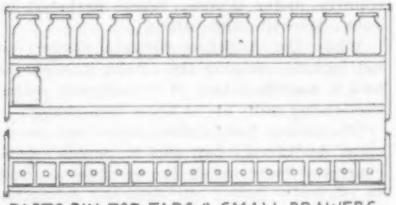
Much of the equipment required in a service shop is of a special nature and must, to some extent, be home made. Some of the equipment may be purchased on the market.

The very first thing that every shop, large or small, must have is one or more work benches. Steel benches may be purchased, if you prefer, or wooden benches may be constructed in your shop. The usual dimensions are 30 inches wide, 33 inches high and 5 feet long for each man working at the bench. Two to four drawers and one vise are provided for each five feet in length. An air line to each five foot space is a very convenient refinement but not a necessity. These recommendations are for work benches only and not for test or run-in benches.

Keep Bench Clear

Many service shops make a practice of mounting grinding wheels, drill presses, compressor run-in stands and other motor driven tools on the work bench, but this is a practice which can be considered neither safe nor efficient. The work bench should contain no permanently mounted equipment apart from a vise. If it is necessary to mount motor driven tools on a bench, a separate bench or stand should be provided for them. Many trick racks and containers for tools, nuts, bolts and small parts have been suggested and used on work benches but such arrangements usually become an unsightly "catch-all." A far better appearance is attained when such items are conveniently arranged in jars, drawers or racks under the bench, keeping the top clean of everything but the work on hand as illustrated in Fig. 3 above.

PARTS JARS UNDER BENCH



PARTS BIN FOR JARS & SMALL DRAWERS

FIG. 3

Fig. 1. A floor plan layout for shop and salesroom where both are given prominence.

C. W. Phillips
Takoma Park 12, D. C.

I have been receiving THE REFRIGERATION SERVICE ENGINEER for two years and have yet to see a copy that has not contained several items of extreme interest to me. Allow me to add my compliments to your no doubt already long list.

Design Factors of the Commercial Hermetic

By CARL OLIN[1]

AROUND 1901 a French monk by the name of Audiffren struck upon an idea of hermetically sealing a refrigeration compressor, in which sulphur dioxide was used as the refrigerant. He pooled interests with Singren and the two produced this machine in fair quantities in France and later these sealed type units were successfully manufactured and sold in this country under license; being marketed by Johns-Manville and others.

While the Audiffren-Singren design did not include encasing the motor, it might be said it was the father of hermetically sealed condensing units as we know them today.

Of course, vast strides have been made since Audiffren's day and he couldn't have conceived these watch-like mechanisms that so efficiently power our domestic refrigerators, nor the compact multi-cylinder commercial and air conditioning units which are now built in sizes up through 100 h.p. All of this has come about through efforts of all to obtain compactness, improve over-all performance, and reduce the possibility of break-down in service.

The Modern Hermetically Sealed Unit

To the uninitiated, the hermetically sealed unit can be baffling, for since there are no revolving parts visible (except the fan) the usual basis for spot inspection cannot be applied.

Through this discussion we can become better acquainted with this type of refrigerating machine and can better understand the conditions that might be found and better analyze symptoms. While a lot of this information is applicable to the "household" unit, I have in mind specifically those sizes of condensing units commonly used in commercial refrigeration and air conditioning applications.

I like to refer to the motor and compressor assembly as the power unit—it is the principal hermetically sealed element. For the sake of clarity, the electrical condensers can best be termed by their other name "capacitors"—to avoid confusing with the refrigerant condenser.

Commercial Hermetics will show substantial increases in coming years. In this article the author discusses design factors of the sealed unit and provides some pertinent service pointers.

Reference will be made to two types; the fully welded-in hermetically sealed power unit and the bolted flange type of field serviceable type hermetically sealed unit, sometimes referred to as a semi-sealed typ.

Similarity to Belt Driven Designs

A study of a cutaway of any of the sealed power units will reveal they are composed essentially of the usual motor and rather conventional compressor, all mounted within a sealed housing. The balance of the unit too, is similar except that the condenser fan is mounted on a separate motor which operates simultaneously with the power unit. In addition, most of those used for commercial or air conditioning applications are equipped with shut-off valves of rather conventional design, permitting testing and checking for operating characteristics much the same way as with the familiar belt driven type compressors.

In other words, the approach from the refrigeration service engineers' viewpoint, in the application of the unit or diagnosis of trouble, is much the same as with belt driven type equipment.

[1] Asst. sales manager, Electric Refrigeration Division, Servel Sales Inc.

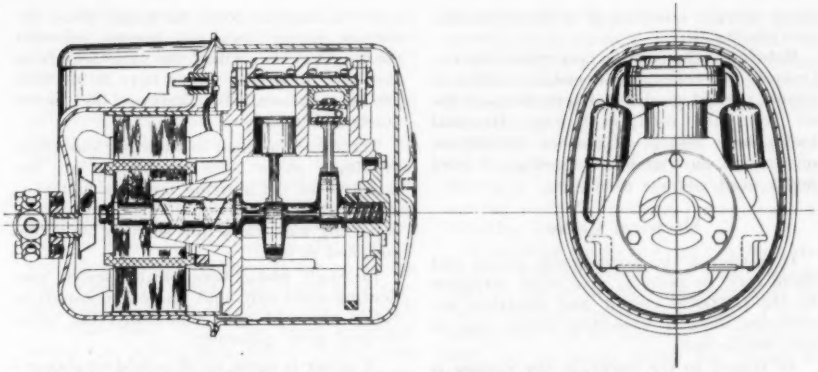


Fig. 1—Typical cross-section of steel cased Servel Supermatic Unit showing the motor and compressor with the suction service valve at the right

Sub Assembly Exchange

I like to consider this trend toward the sealed type design as paralleling the practice that has been in effect in the automobile industry for a number of years.

Repairs of automobiles have for some years been performed by the use of complete replacement sub-assemblies. Seldom does the modern auto mechanic attempt repairs on such an accessory as a water pump, a fuel pump, or a carburetor; in fact, for most of the popular priced cars, complete replacement engines can be obtained.

The automobile industry has found that rebuilding work can be best accomplished under conditions where shop practices can be standardized and advantage can be taken of production line procedures.

The advent of the hermetically sealed condensing unit has made it possible for the commercial and air conditioning industry to utilize similar practices which, for the economy and efficiency they make possible, can result in the wider use of mechanical refrigeration.

We, at Servel for example, have devised a design and maintenance plan that anticipates exchange of complete accessories and sub-assemblies (the power unit as typical) where an inoperative condition is encountered. Any such program, of course, must be founded on a design and methods of construction and test, that result in the very minimum of trouble being developed in the field.

The Power Unit

Now for a more searching inspection of the parts within the sealed power unit.

The compressor in the Servel Supermatic illustrated in Fig. 1, is of the familiar reciprocating type. The crankcase or power unit casing is on the suction side. Note that the suction (refrigerant) gas is drawn through and around the motor, actually resulting in a refrigerant cooled motor.

To assure quiet operation through the years, both a suction and discharge muffler have been included. Discharge is through the muffler and directly to the condenser.

A generously sized screen mounted at the suction shut-off valve is designed to protect the moving parts and there is further protection for the compressor in the design of suction muffler used.

Lubrication Cycle

The lubrication cycle is interesting. Whereas we have produced in quantity, compressors of special design using splash feed lubrication that operate at speeds as high as 3000 r.p.m., it was felt the refinement of force feed lubrication had sufficient sales appeal to warrant including in the Servel Supermatic.

In the smaller sizes oil reaches the bearings under pressure by means of a screw type pump, which in turn is fed by a cushioned oil ring that is submerged in and slowly revolves in the crankcase oil. The main bearings, the connecting rod bearings, the pistons and piston pins (through drilled connecting rods) are lubricated by this screw type pump forcing oil through the drilled crankshaft.

In the larger sizes beginning with one horsepower, a greater quantity of lubricant is circulated requiring a piston type oil

pump which is operated off a "throw" on the crankshaft.

Returning the suction gas (with its entrained oil) through the motor, results in almost perfect mechanical separation of the oil from the refrigerant gas. Residual motor heat results in further distillation, minimizing any tendency to slug oil even under most adverse conditions.

Electrical Cycle

It is true in the hermetically sealed unit there may be need to give more attention to the electrical circuit and electrical accessories, than is necessary in the case of belt driven units.

In regard to the latter, if low voltage is encountered or some inefficiency develops in the motor, the effects are visual and in many cases readily recognizable without need for electrical test apparatus.

Not so, however, with the sealed unit. Here, low voltage shows up simply as a "cut out" at the time the control "calls for unit operation," a condition that is also a symptom of one or more other causes of difficulties.

For this reason it would not be amiss to consider for a moment, "the electrical cycle" as in addition the usual consideration of the refrigeration cycle and the lubrication cycle.

Single Phase Induction Type Motors

Perhaps for the sake of a fuller understanding on the part of all, we can at this point best deal with the description of the single phase induction motor in a rather elementary fashion.

The capacitor start, induction run, motors used in the single phase Servel Supermatics are not substantially different from that same type as used on so many belt driven condensing units and other apparatus.

In its simplest form the single phase induction motor does not possess inherent starting torque. All of the variations from the basic induction motor have to do with the arrangement for getting the motor started into motion.

The names applied to these various types of single phase induction motors are descriptive of the starting methods used, i.e., shaded pole, repulsion-induction, split phase, capacitor run, capacitor starting induction run, and so on.

In single phase hermetically sealed condensing units only split phase and capacitor types are used and, admittedly, the latter is used more generally.

A motor is made up of a field or stator—the stationary member—and the rotor which revolves within the stator. The stator is made of a stack of slotted laminations and the current carrying field coils are assembled in the slots (adjacent to the air gap separating the field and the rotor).

The rotor is also made up of a stack of steel sheet laminations but in the slots of the rotor are bars which are all connected together at the rotor ends by rings (of the same material as the bars)—referred to as being short circuited to one another.

The Magnetic Field

Such a motor is made possible due to the phenomena or laws of electro magnetism. When electric current is passed through a wire it sets up a magnetic field surrounding

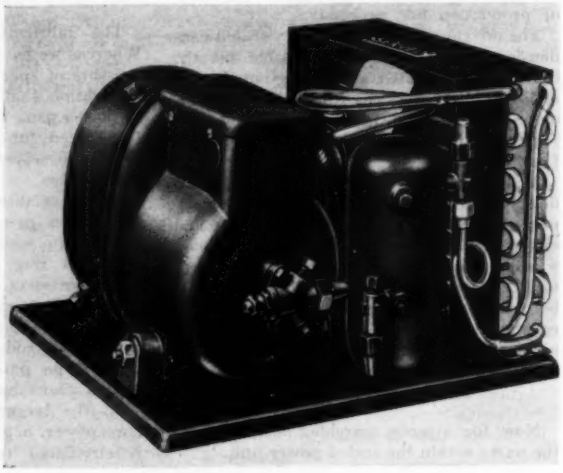


Fig. 2—The Servel Supermatic Power Unit

it. Likewise, when current is passed through the field or stator coils of a motor, magnetic lines of force are created which "penetrate" the rotor.

It will be recalled this electro-magnetism principle is employed or utilized in the familiar solenoid, which is used to power all sorts of valves, accessories, and mechanisms.

A second principle made use of in the function of such a motor is that when magnetic lines of force are cut by metallic conductors (such as the bars in the slots of the rotor) electric current is set up in the conductor. We would, therefore, have current induced by the current passing through the field coils; hence, the term induction motor. As before, such electric current even induced, passing through the conductor bars of the rotor, would set up "its own" magnetic field, and the magnetic attraction and repulsion of these two magnetic fields, that of the wound stator and that of the "induced rotor," serve to pull and push the rotor in its rotation.

Now obviously, if we are going to thus revolve the rotor—that is, drive the rotor, the magnetic lines of force must be cut by revolving the electro-magnet created in the field or stator, and this is actually accomplished electrically (rather than revolving the stator physically) through methods used in winding the stator coils.

And therein lies the principal difference in the various types of single phase induction type motors, i.e., the method of creating a revolving field of magnetism or a rotating magnetic field, as it is often termed.

The rate of the rotation or r.p.m. of the magnetic field is dependent on the number of magnetic poles designed into the stator. Since the motors involved here are in practically every instance of the 4 pole type, the r.p.m. of the magnetic field is 1800 (this is referred to as the synchronous speed) but for 2 pole it is 3600 and for 6 pole, 1200, etc.

Since from the above it can be shown that the rotor cannot revolve except as the magnetic lines of force are cut, it follows the rotation of the rotor must always lag behind the synchronous speed—accounting for the fact the actual r.p.m. of these 4 pole motors is from 1725 to 1750.

Accessory Description

Aside from the obvious differences in the lubrication of the motor bearings, the principal difference is in the switching mechanism converting from the starting windings to the running (main) windings. In the conventional open type motor this is usually accomplished through a centrifugally operated switch—strictly mechanical—whereas in the Servel Supermetic this is accomplished electrically through a relay known as a voltage type.

As is the usual practice in "capacitor start" motors, the starting capacitor is connected in series with the starting windings —being connected between the relay and the "starting winding" terminal.

A combination thermal and current overload protection switch has been included. This is not essentially different from that found in many open type motors. A rise in temperature or an increase in electric current beyond fixed limits will cause this switch to break the circuit and stop the motor. As this switch cools off, it will reset automatically, but if the overload persists, it will again break the electric circuit.

A starting relay is used which when energized opens the circuit—that is, breaks the circuit of the starting capacitor and starting windings.

When the temperature or pressure control "calls for" operation, both starting and running (main) windings of the motor are energized simultaneously. As the motor comes up to speed, a matter of seconds, the generator effect causes voltage rise in the starting windings which on reaching a predetermined value energizes the starting relay coil causing the starting capacitor and starting windings to be "cut from the circuit." The motor then proceeds to operate as a straight induction motor on the running or main windings only.

Once the unit completes an operating cycle, the relay contacts (for the starting windings) having been returned to a "closed" position, will permit restarting as required, in the above sequence.

Application of Servel Supermetic

In all probability Servel Supermetics for the next year at least will be used in new installations only, either in self-contained fixtures or in new remote installations. Of course, this doesn't mean the systems can be assumed to be clean and dry.

The inclusion of a good dehydrator in the liquid refrigerant line is good general practice but this cannot be expected to do the entire job of removing residual moisture.

We have always recommended an auxiliary vacuum pump be used to remove air from the system initially, and in many cases

this operation can be utilized to also remove existing moisture.

If heat is applied over the system during the period a deep vacuum is being maintained, moisture will be evaporated and the system rather effectively dried out. For more complex circuits or for lower temperature applications, it is preferable to use dehydrated hot air, drawing this through the entire system from the expansion valve to the power unit.

Use Freon-12 Only

Practically all hermetically sealed condensing units utilize aluminum or aluminum alloys in their make up within the power unit and this is true of the Servel Supermetic. This, of course, rules out the use of methyl chloride and only Freon-12 is to be used as the refrigerant.

Applying to Existing Equipment

Eventually, of course, these sealed units will be applied to existing fixtures to replace condensing units of some other type and of earlier vintage. When considering an old installation, any reference to "cleanliness" or to removing "foreign matter" includes removing all trace of the original refrigerant and refrigerant oil as well as any residual matter which would contaminate the system.

Such an operation can best be accomplished by circulating an approved solvent through the evaporator and connecting tubing, with a conventional all brass circulating pump, and then removing traces of the solvent, by evacuation with an auxiliary vacuum pump.

Whereas such a procedure should have been followed as a standard practice regardless of the type of unit involved, we know in many cases it was short circuited with the hope no ill effects would develop. Such negligence, however, simply cannot be tolerated when installing a hermetically sealed type unit.

Symptoms and Corrections

Now, as to symptoms of trouble and their diagnosis, if the unit will run, the old rule of applying gauges as a first operation most certainly holds as true as it has in the past. Checking for low charge, leaking discharge valves, stopped up expansion valve or capillary, is to be performed in the same way as these faults have been traced in belt driven units.

If the unit will not run, the electrical accessories can best be tested by the use of a "test accessory" set or harness. By elimination, the specific accessory at fault can thus be identified.

It goes without saying, if the unit is "off on the overload," the cause of that condition must be traced and corrected. For example, it may be due to a short in the running capacitor or open circuit in the starting capacitor, or the many other reasons for an overloaded motor.

S S S

SERVICE COMPANY EMPLOYS G.I.'s

KLINE'S Refrigeration Service of Springfield, Illinois has set the pace for putting discharged veterans back to work. J. J. Kline, owner of the business, has two veterans discharged from the navy doing service and installation work. Both men are proving that they have what it takes to pick up where they stopped when entering the armed forces. With Mr. Kline's experience and ability to show his men how to do the job, he feels he has added two men to his service force who will be of great help to the business.

Both the Atlantic and Pacific fleet are represented. Wilbur Compton saw action in the Atlantic and Alfred Dudda saw action in the Pacific. Mr. Kline says, "These men are very conscientious in their work and are willing to tackle any type of refrigeration problem that comes along." He believes the experience they will get in working for him will enable them to set up and properly manage a business of their own if they desire to do so later on.

Mrs. Kline assists her husband, Jim, by taking 'phone calls and keeping the records. Jim believes in doing the majority of work on domestic refrigerators in his shop. The refrigerator is given a thorough examination before repairing and tested after the repairs are made before returning to the owner. He requires his men to be thoroughly familiar with a commercial system before making adjustments. Such a procedure may require the service man to study the job for a few minutes before starting the repairs but it eliminates many call-backs for further adjustments, according to Mr. Kline.

S S S

C. P. Jacobs
Greensburg, Ind.

Thanks for the reminder to renew my subscription. I could hardly get along without this magazine.

Construction, Operation and Servicing (*Article Eight*)

The Coldspot Electric Refrigerator

This is the eighth of a series of articles giving detailed servicing instructions on Coldspot Electric Units, compiled from the Service Manual issued by Sears, Roebuck & Company, makers of the Coldspot Unit and is published with their permission. This is the first authorized publication of this material and will prove of inestimable value to the thousands of service engineers all over the country who daily come in contact with these refrigerators.

COMPLAINTS AND CORRECTIONS

The first and *most important* step in making a service call is the proper diagnosis of the trouble. Before such diagnosis can be made, the customer's complaint must be considered *completely*. If the customer is unable to give a clear explanation of the exact trouble, the Serviceman should obtain the necessary information by asking properly chosen questions.

Do not make "snap judgments." Do not assume that a condition exists or does not exist, until you have positive evidence to prove it.

Regardless of the nature of the complaint, do not assume that the customer is mistaken or does not have a bona fide reason for complaint. There is always some cause for a complaint if one is made. Sometimes the cause is a misunderstanding on the customer's part of some function of the Coldspot. In such an instance, do not jump to the conclusion that the trouble is merely "mental" but check carefully to be certain that no mechanical trouble exists which might *even remotely* be a cause.

When the customer has been given ample opportunity to state the effects which he noticed, only then should the Serviceman start to diagnose the trouble.

The Complaint is a Guide

The customer's complaint, of course, will determine the direction to be taken in testing and analyzing to locate the cause of the trouble. The following chart of complaints, causes, and remedies will act as a guide in locating the parts of the unit which may be causing the difficulty. However, a top-notch Serviceman will not limit himself to merely checking the unit for the specific trouble causing complaint. He will make note, by observation at least, of all the conditions surrounding the refrigerator and the manner in which it is being used. Then, if there is evidence of misuse, abuse, lack of care, or misunderstanding in operation, the customer should be advised of the condition and suggestions made to correct the situation. In this way future trouble and consequent service calls can be avoided while at the same time a great deal of customer good will is gained.

Routine Check

An experienced and competent serviceman *knows* the value of checking over the entire unit and cabinet in a routine manner regardless of the nature of the complaint. By adopting a standard procedure, a step-by-step method of testing, the serviceman can restore the refrigerator to perfect adjustment and operation in the shortest time with the most certain results. Future calls, customer dissatisfaction, and loss of Good Will can be avoided by being positive the Coldspot is in correct adjustment and condition on the *first* call.

Of course, as mentioned previously, the cause of the customer's particular complaint must be remedied. However, the serviceman should not content himself with merely making a repair or change in one portion of the refrigerator when a thorough but simple check might reveal other causes for less than perfect operation.

Some of the operations described can be performed simultaneously and are so indicated.

(Diagnosis Tables follow)

Table of Complaints and Remedies

COMPLAINT: UNIT WILL NOT RUN

CAUSE	REMEDY
1. Plug out or loose in outlet.	1. Plug motor cord in outlet.
2. Switch off or safety cut-out tripped.	2. Turn switch ON or reset safety cut-out.
3. No power at outlet.	3. Try lamp or other appliance in outlet box. If no power, examine line fuse or call power company.
4. Defective thermostat.	4. Short thermostat out of the circuit. If defective, replace.
5. Loose or defective connection or defective motor.	5. Repair connection or replace motor.
6. Defective capacitor.	6. Replace capacitor.
7. Wrong current.	7. Connect to proper supply or change motor.
8. Liquid SO_2 in compressor.	8. Keep resetting overload.
9. Stuck compressor.	9. Turn compressor by hand to loosen up. If too tight after several attempts, return to factory.

COMPLAINT: UNIT WILL NOT REFRIGERATE

CAUSE	REMEDY
1. Liquid SO_2 in compressor.	1. Raise condenser end of unit and let run until quiet or tubes begin to frost.
2. Lost charge of SO_2.	2. Return to factory.
3. Displaced oil.	3. Dump receiver.
4. Expansion valve stuck.	4. Flush expansion valve.

COMPLAINT: UNIT RUNS TOO MUCH OR CONTINUOUSLY

CAUSE	REMEDY
1. Expansion valve out of adjustment.	1. Readjust expansion valve.
2. Expansion valve stuck.	2. Flush expansion valve.
3. Cold Control set too cold.	3. Set on warmer position.
4. Thermostat bulb loose.	4. Tighten clip to make secure contact for bulb.
5. Thermostat out of adjustment.	5. Adjust thermostat.
6. Defective thermostat.	6. Replace thermostat.
7. Clogged condenser.	7. Clean condenser.
8. Lack of air to condenser.	8. Improve air circulation.
9. Baffles missing or poorly fitted.	9. Install or fit baffles.

COMPLAINT: UNIT OPERATES ERRATICALLY

CAUSE	REMEDY
1. Thermostat bulb loose.	1. Tighten clip to make secure contact for bulb.
2. Erratic expansion valve.	2. Flush expansion valve, and readjust.
3. Check valve leak.	3. Return to factory.
4. Bad electrical connection.	4. Repair connection.

COMPLAINT: SHORT IDLE PERIOD

CAUSE	REMEDY
1. Check valve leak.	1. Return to factory.
2. Thermostat bulb loose.	2. Tighten clip to make secure contact for bulb.
3. Thermostat out of adjustment.	3. Adjust thermostat.
4. Cold Control on Quick Freeze.	4. Set Cold Control on warmer position.
5. Cabinet leaks air.	5. Check gaskets, fit of doors and hardware.

COMPLAINT: CABINET TOO WARM

CAUSE	REMEDY
1. Thermostat out of adjustment.	1. Adjust thermostat.
2. Cabinet leaks air.	2. Check gaskets, fit of doors and hardware.
3. Poor circulation in cabinet.	3. Arrange contents properly.
4. Poor location of cabinet.	4. Locate cabinet better.
5. Overloaded cabinet.	5. Reduce load.
6. Expansion valve out of adjustment.	6. Adjust expansion valve.
7. Cold Control too warm or on "defrost."	7. Set on colder position.

COMPLAINT: CABINET TOO COLD

CAUSE	REMEDY
1. Thermostat bulb loose.	1. Tighten clip to make secure contact for bulb.
2. Thermostat out of adjustment.	2. Adjust thermostat.
3. Expansion valve out of adjustment.	3. Adjust expansion valve.
4. Check valve leak.	4. Return to factory.
5. Cold Control set too cold.	5. Set on warmer position.

COMPLAINT: DEFROSTING WHILE IDLE

CAUSE	REMEDY
1. Thermostat on "defrost."	1. Set thermostat on proper position.
2. (Whole evaporator?) thermostat defective or out of adjustment.	2. Replace or adjust thermostat.
3. (Top of coils?) natural condition or air leak into cabinet.	3. Check gaskets, fit of doors and hardware.

COMPLAINT: DEFROSTING WHILE RUNNING

CAUSE	REMEDY
1. Too warm water in trays.	1. Natural condition.
2. Cabinet overloaded.	2. Reduce load temporarily.
3. Expansion valve sticking open or closed.	3. Flush valve and readjust.

COMPLAINT: ICE ON EVAPORATOR

CAUSE	REMEDY
1. Defrosting while idle.	1. See "Defrosting While Idle" above.
2. Water spilled over edge of trays.	2. Level cabinet or evaporator.

COMPLAINT: MOTOR TOO HOT

CAUSE	REMEDY
1. Condenser clogged.	1. Clean condenser.
2. Poor air circulation.	2. Provide better conditions.
3. Motor bearings dry.	3. Oil motor.
4. Motor defective.	4. Replace motor.
5. Baffles missing or poorly fitted.	5. Install or fit baffles.

COMPLAINT: SAFETY CUT-OUT TRIPS FREQUENTLY

CAUSE	REMEDY
1. Low voltage.	1. Have line voltage checked.
2. Condenser clogged.	2. Clean condenser.
3. Compressor sticking.	3. Return to factory.
4. Motor bearings dry.	4. Oil motor.
5. Motor defective.	5. Replace motor.
6. Thermostat or relay defective.	6. Replace thermostat or relay.
7. Baffles missing or poorly fitted.	7. Install or fit baffles.

COMPLAINT: UNIT NOISY

CAUSE	REMEDY
1. Motor bearings dry.	1. Oil motor.
2. Other motor noises.	2. Replace motor.
3. Spring mountings tight.	3. Make spring mountings perfectly free.
4. Vibrating parts.	4. See that parts do not contact.
5. Blade noise.	5. Displaced oil expansion valve stuck.
6. Drive washer and pins worn.	6. Replace drive washer and couplings.

COMPLAINT: EXCESSIVE VIBRATION

CAUSE	REMEDY
1. Flexible drive washer or coupling pins worn.	1. Replace flexible drive washer and couplings.
2. Damaged fan.	2. Replace fan.
3. Spring mountings tight.	3. Make spring mountings perfectly free.

COMPLAINT: LEAKS

CAUSE	REMEDY
1. Seal leak (oil or gas).	1. Oil and run unit to reseat seal.
2. Seal bellows leak.	2. Return to factory.
3. Other leaks.	3. Locate and return to factory.

COMPLAINT: EXCESSIVE COST OF OPERATION

CAUSE	REMEDY
1. Runs too much.	1.
a. Poor location.	a. Move to more suitable location.
b. Poor air circulation.	b. Provide better conditions.
c. Condenser clogged.	c. Clean condenser.
d. Abnormal use.	d. Instruct customer as to proper use.
e. Cold Control set too cold.	e. Set on warmer position.
f. Cabinet leaks air.	f. Check gaskets, fit of doors and hardware.
g. Thermostat bulb loose.	g. Tighten clip to make secure contact.
h. Thermostat out of adjustment.	h. Adjust the thermostat.
i. Expansion valve out of adjustment.	i. Adjust expansion valve.
j. Check valve leak.	j. Return to factory.
2. High power rate.	2. See that customer has special rates, if available.
3. Creeping meter.	3. Check meter and notify power company.
4. Reading wrong meter.	4. Notify power company.
5. Misleading bill.	5. Check items comprising bill.
6. Excessive or careless use.	6. Explain how it affects bill.

COMPLAINT: FAILURE OF DEFROSTING SWITCH

CAUSE	REMEDY
1. Returns before frost is melted from evaporator.	1. Too heavy accumulation of frost or door left open during defrosting.
2. Excessive time to return after frost has melted.	2. Trays full of ice left in evaporator or cool room temperature.
3. Other defects.	3. Replace thermostat.

Open Type Dry Expansion Systems

1. Freeze in thermometer in preparation for checking expansion valve adjustment.
2. Note frost on evaporator, food load, and air circulation in cabinet. Check door seal gasket (with feeler gauge or card).
3. Remove lid of cabinet, check air circulation through condenser and flues. Check placement of baffles. Oil motor. Check spring mounting of compressor-motor assembly.
4. During the time consumed for these inspections, the frozen-in thermometer should be read every two minutes until a constant reading is obtained. The expansion valve can then be readjusted, if not correct.
5. Stop motor and check coupling, alignment, fan, and ease of turning compressor shaft.
6. Check thermostat cut-in temperature. Readjust if necessary.

Hermetic Dry Expansion Systems

1. Same as for Open Type systems.
2. Same as for Open Type systems.
3. Same as for Open Type systems, except that only the fan motor may need oiling.
4. Same as for Open Type systems.
5. Omit for Hermetic Systems.
6. Same as for Open Type systems.

Hermetic Flooded Systems

1. Omit for Flooded Systems.
2. Check frost on evaporator (frost line should be a little below the horizontal center of evaporator headers). Check load and circulation and door seal.
3. Same as for Open systems except only fan motor may need oiling.
4. Omit for Flooded systems.
5. Omit for Flooded systems.
6. Same as for Open systems.

The above procedure should be followed on every service call if the complaint is concerned with the refrigerating function of the Coldspot. The order in which these tests are made can be changed to suit the conditions found. The suggested routine is planned to save time by over-lapping the operations that would otherwise require time in waiting for final readings.

Use of Gauges

If an Open Type unit is out of the guarantee, a gauge may be used to check the compressor and expansion valve. Do not use a gauge or open the sealed system on a Hermetic unit or a Flooded type system or a unit with a sealed charging port. The use of gauges is made hazardous by the strong chemical affinity of SO_2 for water.

In order to derive the full benefits of the use of gauges, it is essential that the following instructions be observed.

When to Use the Gauge

1. If normal check with thermometer does not correct operation.
2. Unit will not refrigerate.
3. Evaporator coils are not evenly frosted.
4. Erratic freezing.
5. Expansion valve evidently very much out of adjustment; or in resetting after flushing of expansion valve.
6. Evidence of check valve leak.
7. Unit runs unusually hot for no apparent reason.
8. Defrosting while running.

Installing the Gauge

1. Shut off motor and remove the adapter fitting cap.
2. Place *good* washers on the adapter to insure against leaks.
3. Loosen packing nut on adapter and push stem through so that lower end of stem will engage adapter valve.
4. Screw adapter into adapter fitting with stem engaged in adapter valve and washers in place.
5. Tighten adapter in fitting being careful not to split the washer.
6. Tap the stem down into place and tighten packing nut just enough to prevent leaking around the stem.
7. Install gauge on adapter.
8. Open adapter valve (right hand thread) slowly, by turning stem 4 to 6 half turns.
9. When gauge registers pressure, *loosen joint nearest gauge until SO_2 escapes, then tighten joint.*
10. Blow gas away from the unit and *test for leaks with ammonia.* If there are no leaks, unit is ready to start. *If even the slightest leak is present, do not operate the unit until the leak has been located and corrected.* When the unit operates at a vacuum, air which always contains moisture will be drawn into the system with eventual serious damage to the compressor.

Normal Cycle; ice trays empty, or cubes frozen and cabinet cold—when the machine

(Continued on page 52)

QUESTIONS AND ANSWERS

On Problems of Servicing, Installation and Maintenance of Household and Commercial Refrigerating Equipment—Send Your Problems to the Question Box.

K FACTOR OF COILS AND HEATLOAD FIGURES

QUESTION 681: I have been reading THE REFRIGERATION SERVICE ENGINEER for some years. Now, I would like to know what method to use to get the K factor of an evaporator where it is not known so I can figure the basic rating.

I would also like to know where I can find such data as would be helpful in figuring compressor capacities and the refrigeration loads to install a complete job.

ANSWER: There is no accurate field method of obtaining the basic rating of an evaporator. The K factor varies with each make of coil due to the bonding of the fins to the primary surface, the length of the secondary surface from the primary surface, the fins per inch, the ratio of primary to secondary surface, and the method of air circulation over the coil surface.

You can, however, estimate the coil's ability to absorb heat and arrive at conclusions by checking the temperature difference between the refrigerant and the ambient air. If the T.D. is abnormally high and all other things are normal, it is safe to conclude that the coil is too small for the installation.

There may be sufficient area on the coil but improper air circulation or the improper selection of fin spacing may prevent it from performing under the prevailing conditions. Closely spaced fins are used on high temperature applications while wide fin spacing is suitable for lower temperatures. Extremely low temperature applications of fin coils generally perform best when arranged for automatic defrosting.

The equipment manufacturers are the only reliable source of information on condensing units and evaporators. Information contained in the following issues of THE REFRIGERATION SERVICE ENGINEER should give you complete information for figuring the average refrigeration installation:

Jan. 1940, page 23; May 1940, page 27; Oct. 1940, page 11; Nov. 1940, page 15; Dec. 1940, page 29; Jan. 1941, page 24; Feb. 1941, page 14; Mar. 1941, page 13; Nov. 1941, page 24.

DRYING OVEN

QUESTION 682: Where could we obtain drawings or diagrams and an explanation for building a good dehydrating oven for refrigerating units? What we would like is something that is possible to build without too much expense yet adaptable to this type of work.

ANSWER: The points to consider in building a drying oven are even heat under thermostatic control, adequate size for parts or units to be dehydrated, adequate vacuum outlets in the oven, and a gear type vacuum pump. The August, 1939, issue of THE REFRIGERATION SERVICE ENGINEER contains an article showing a diagram of one such oven built and used by a service company.

EVAPORATOR TROUBLE ON MULTIPLE SYSTEM

QUESTION 683: I have a problem confronting me on a G. E. installation in a fur storage vault measuring 29 x 20 x 17 feet high. To this was added a mezzanine measuring 24 x 16 x 7½ feet high.. The original room was cooled by four EC17 G.E. blower units hooked to a 82T—3hp. G.E. unit. I added another EC181 blower unit on the mezzanine. All blowers are fed with ⅜ inch liquid lines and ⅝ inch suction lines connect into a 1⅝ inch main suction line.

After the installation of the EC181 unit, the system failed to operate satisfactorily so I changed the motor for a 5 h.p. with a pulley to drive the compressor about 650 r.p.m. Then two of the original blower units and the newly installed one failed to frost unless I shut the fans down on the others.

I have information that shows one EC17 unit will take care of 400 cubic feet; two EC17's, 1200 cubic feet; three EC17's, 2400 cubic feet, but I have no further capacity data on them. The system uses Freon-12 and the liquid line from the unit is ½ inch.

ANSWER: The first thing we did was figure the load for the cooled space. If the floor is also insulated with 4 inches of corkboard, the load will be approximately 82,000 Btu. per hour. If floors are not insulated,

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This afternoon, in some distant city, a butcher with his walk-in cooler containing precious red-point meats, places a hurry-up call for a refrigeration service engineer — something is wrong with his refrigerating equipment.

The butcher faces loss of money, loss of meats and wasted points. But, this very night, a *refrigerating service engineer* works to set that equipment working again. Saving the butcher money, protecting his produce . . . helping him to stay in business.

On that service call, A-P DEPENDABLE Refrigeration Controls went along too. It's a fact, leading refrigeration service engineers depend on A-P DEPENDABLE Refrigeration Controls to help them make their service calls 100% successful.

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A-P Model 220K Thermostatic Expansion Valve. Capacity, to 16 tons Freon.

DEPENDABLE
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the load will approximate 190,000 Btu. per hour.

The capacity of EC17 units is 5000 Btu. per hour. EC181 units are rated at 8000 Btu. per hour (based on 15° t.d.). This means that the four EC17 units and one EC181 unit will handle 28,000 Btu. per hour. The 82T condensing unit with a 3 h.p. motor and a compressor speed of 730 r.p.m., according to G. E. information, has a capacity of 37,000 Btu. per hour at 20° refrigerant.

With a 5 hp. motor you should run the compressor 730 r.p.m. or faster. Of course, it may be necessary to increase the condensing surface to care for the additional load when the compressor is speeded up.

I can see no reason why one coil will become inoperative unless the coil is loaded with oil or the suction line from the coil to the main suction is pitched toward the coil, permitting refrigerant to enter and cool the thermal bulb.

SEQUEL TO QUESTION NO. 683

Here are the changes I made on the installation and now have it working as it should: I first removed and repaired all blower motors. Two motors are still at the factory for repairs. I changed the ½ inch liquid line to ⅝ to a point where it fed the EC181 unit and two EC17 units. All the coils are still connected with a short run of ⅜ liquid and ⅝ suction lines. I changed the thermostatic expansion valve on the EC181 unit, then added a small amount of Freon-12 and turned the machine on. In about two hours, all the units were frosted and the storage vault temperature dropped from 70 degrees to 40 degrees.

I do not know exactly what was done to correct the trouble. Perhaps you can suggest the possible answer.

ANSWER: In trying to analyze the corrections you made, I feel that the changes you made were all necessary. I note you had two of the blower motors removed when you made the test run. It is just possible that when these are again installed, you will find some of the original trouble returns. It might be advisable to pay particular attention to the manner in which the suction line from the EC181 coil enters the main return. This should enter on the branch of a tee instead of one leg of the run; that is, the flow from the other 4 coils should pass straight through the tee instead of turning. If the tee is installed so that the vapor enters the branch from the 4 coils, it will build up considerable impact pressure which will prevent normal flow of the vapor from the EC181 coil.

I would also recommend a ¾-inch suction line from the EC181 unit. The pressure drop in a ⅝-inch suction line handling a load of 8000 Btu. will be about 10 lbs. per 100 feet. The smaller coils rated at 5000 Btu. should have adequate suction size at ⅝ inch because the pressure drop is about 2.8 lbs. per 100 feet.

REMOVING FEDDERS FLOAT

QUESTION 684: Please advise if it is possible to remove the Fedders, Bucket or Pan type float from the evaporator of a Norge refrigerator, D, 1934 or 1935 Model, by removing the solder only.

I have one of this description which is giving some trouble. Changing the needle and seat assembly's has not helped. I find that the float is not stuck, but it will not control the liquid at all.

The evaporator is crimped just back of the float header and on the float header, and then soldered. I feel as though the float will have to be removed to correct the trouble.

ANSWER: The header in the Fedders float can be removed by melting the solder and then dropping the float valve assembly out. You may find the point that pushes against the end of the needle is not contacting it as it should. The needle is held between a spring clamp to open the valve when the pan or ball drops.

I would suggest that the header be resoldered with 95-5 solder to assure long life.

SILICA-GEL DRYER ON SULPHUR DIOXIDE SYSTEM

QUESTION 685: Is it advisable to put a Silica-Gel dryer on a sulphur system and leave it on there permanently? If it is not, what would you advise?

ANSWER: Manufacturers of SO_2 recommend the installation of a Silica-Gel dehydrator to become a permanent part of the system. Of course, no dryer will correct a system containing more than a trace of water. Where more than a trace of water is present, any SO_2 system must be dismantled and cleaned before putting back in service.

The Silica-Gel dehydrator need not be removed except for possible replacement of the drying agent, should you find it necessary.

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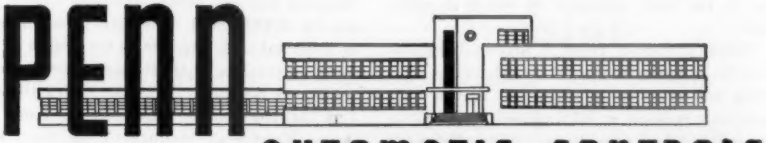
This trio . . . sedimentation, corrosion, rust . . . cannot gain admittance for their destructive work on sliding parts in the PENN 246 water regulator. Why? Because this valve is designed so that *water never comes in contact with sliding parts.*

No chance here for those abrasive deposits which cripple ordinary valves. No rusting of range springs. No premature wear. Water hammer is eliminated, too . . . yet the valve is extremely sensitive to refrigerant head pressure.

Learn more about this new-type water regulator . . . write today for Bulletin R-1986-A. *Penn Electric Switch Co., Goshen, Ind.* Export Division: 13 E. 40th Street, New York 16, U.S.A. In Canada: Powerlite Devices, Ltd., Toronto, Ont.



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

CHANGING FRIGIDAIRE FROM WATER TO AIR COOLED

QUESTION 686: I have a Frigidaire Model SC-75 that was a portable air conditioning unit with a water cooled condenser. I want to convert it to an air cooled unit by installing the proper size condenser and make a permanent installation. I also want to change from Freon-12 to sulphur dioxide. It has a one hp. motor and R compressor. What do you think of the idea? What charge of sulphur dioxide and oil should be used?

ANSWER: I would advise against changing a SC75 Frigidaire from water cooling to air cooling unless you propose removing the unit and placing it in a cool location. The unit compartment of necessity must be sealed to keep the warm air from entering the conditioned room. Water cooling of this compartment is accomplished by a separate water coil.

If you contemplate using this unit on a different application then it would be possible to make an air cooled unit of it. It will require a 1½ hp. condenser for air cooling. The motor pulley should be changed to 2½ inches and under no circumstances should SO_2 be used as the refrigerant. The amount of oil and refrigerant will depend on the equipment to which the unit is connected.

HIGH AND LOW TEMPERATURE UNITS ARE SAME DESIGN

QUESTION 687: What is the difference in high temperature and low temperature condensing units? Do any changes have to be made when using a milk cooler unit on a low temperature box with Dole plates? One manufacturer states that a 1/5 hp. unit speeded up will have the same Btu. capacity as a ¼ hp. unit on standard temperatures.

ANSWER: Insofar as the mechanical features, design, size and arrangement are concerned, there is no difference between low-temp. and high-temp. units. The capacity of a given horsepower unit will vary according to the back pressure on which it operates.

When changing from a higher temperature to a lower temperature, the same machine will run satisfactorily but will be considerably reduced in Btu. capacity. The motor will not be loaded to maximum efficiency; therefore, a larger motor pulley should be installed. This will increase the speed of the compressor and result in an increased capacity. Capacity at high-temp. is generally about one motor size smaller than the same capacity of a low-temp. unit. Many manufacturers increase the speed for low-temp. work using the same compressor.

WATER FREEZES IN PHILCO THERMOSTAT

QUESTION 688: There are a few MAH9 Philco refrigerators here that give trouble due to moisture condensing and freezing in the control. This causes the unit to freeze everything in the box. Installing a replacement control only corrects the trouble for about three months. I have tried sealing the control with rubber tape to no avail. If you can give me any definite service procedure for correcting this trouble, it will be greatly appreciated.

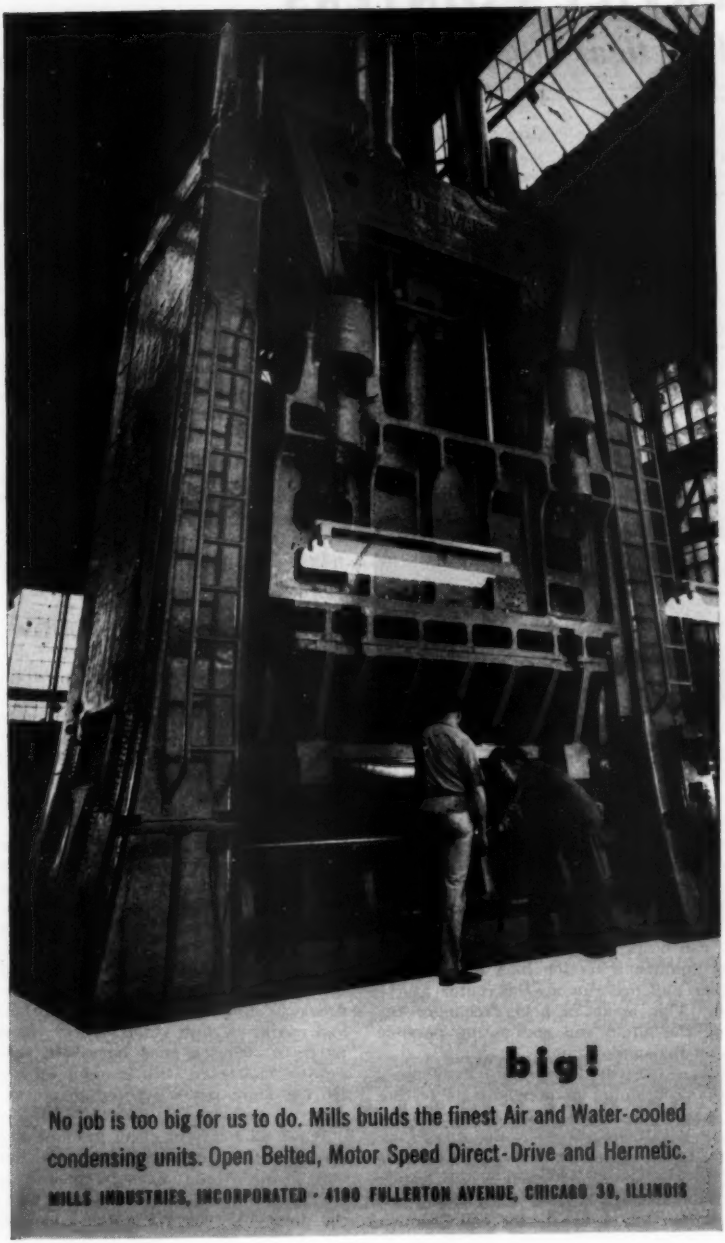
ANSWER: The Philco Corp. made the following recommendation:

"We have designed a special service replacement kit, Part No. 8040-15, which can be procured from any Philco distributor. We suggest you refer the serviceman to the Philco distributor in his area for complete information and price of this service kit which is a permanent repair for the condition."

APEX USED UNIVERSAL COOLER

QUESTION 689: I wonder if you can inform me as to the number and type seal that can be gotten for a household compressor, the number and markings being, Type D D-42000 —Dated 3-24-38. This compressor seems to be the original installation in an Apex refrigerator. It is a twin cylinder compressor with eight face plate bolt holes.

ANSWER: I am quite sure that this model compressor was made by the Universal Cooler Corp., Marion, Ohio. The Universal compressor is also known as Model D-D. The 1936 to 1939 parts list has the following part numbers for the parts recommended to be replaced when installing a new seal: Housing Gasket, 41984; Housing Cover Assembly 41983; Seal Assembly 1014. This is an external seal, and due to the design of the main bearing and shaft, the same type of seal must be used. You can order the seal and its component parts direct from the Apex Electrical Manufacturing Co., 1070 East 152nd St., Cleveland, Ohio, if it is more convenient to do so.


big!
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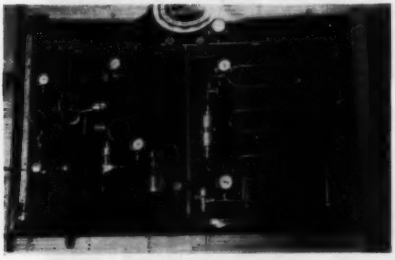
SERVICE POINTERS

Practical Solutions of Your Service Problems

EDITOR'S NOTE: Here are additional contributions submitted in the Service Pointers Contest. Others will appear in the next and following issues.

TESTING EQUIPMENT

AN IMPORTANT feature of our service shop procedure is having properly adjusted and calibrated parts to use when replacements are necessary. It is possible to render better service in less time by having the rebuilt parts adjusted and tested before leaving the shop. To this end, we have devised the refrigeration parts Testing Board illustrated here.



On the right is an evaporator with compound gauges and thermometers at the inlet and outlet for adjusting and checking thermostatic and automatic expansion valves. On the liquid line is a high pressure gauge, line valve, dehydrator, and sight glass through which the refrigerant feeds in the order given. By throttling the line valve, a condition simulating a shortage of refrigerant can be produced.

The liquid and suction lines are soldered together and are run up the center of the board. This makes a heat exchanger for cooling the liquid and eliminating possible frost on the suction line.

To the left of the liquid line is mounted a glass jar containing a water bath for testing and adjusting super heat on expansion valves. The temperature is maintained by feeding from a cross at the inlet of the test evaporator (the other branch has the gauge attached) through a coil around the jar. The suction line tees into the main suction just to the left of the upper left line valve. Air pressure to the T.E.V. being adjusted is supplied through a shut-off valve.

A float testing bracket is mounted on the board with weights and pulleys for maintaining correct pressure on the needle seat. The air line also leads to the float tester. A bracket is mounted below the float ball to facilitate correct calibration. Air pressure is indicated by the gauge at the upper left.

To the extreme left is a 30 inch mercury column attached to the suction line. Between two line valves is a tee and connection for attaching and testing compound gauges for accuracy on the vacuum scale.

The condensing unit operating the Test Board has dual condensers and receivers properly valved and connected to permit testing thermostatic expansion valves with either Freon-12 or methyl chloride. *Submitted by—Dale Mood, Toledo, Ohio.*

S S S

REPAIRING THE GRUNOW COMPRESSOR

GRUNOW compressors will pull a perfect vacuum or as near to it as can be measured by a service gauge. Any Grunow compressor that will not do this needs repairing, since the normal operating pressure is about 1¼ pounds absolute pressure on the low side at the cutout point.

To repair the compressor, remove the dome, the motor stator and motor rotor; then take the compressor out of the case and remove the muffler and bottom plate. Do not take the compressor body from the frame, but it may be necessary to loosen the bolts later for compressor clearance adjustment. Examine the internal parts for breakage and clean off the copper plating and engine varnish stains, if any, from the parts by using a good household scouring powder moistened with gasoline on a cloth. Do not leave parts exposed to air as they will rust quickly.

Wash all parts in clean gasoline and reassemble the compressor into the housing with plenty of oil. Measure the compressor end play by running your finger tips over the joint between the rotor and housing.

HENRY
Cross section of Type 743 Henry Dehydrator.
Greater Efficiency Because of Patented Dispersion Tube. Entire volume of the dehydrant is exposed to penetration by refrigerant.
Strainer Tube Can Be Easily Cleaned or Replaced. The reinforced monel strainer tube is silver soldered to the outlet fitting eliminating by-passing of the refrigerant.
Abso-Dry Pressure Sealing Process. Loosening of seal cap prior to installation produces hissing sound due to escape of dehydrated air indicating that dehydrant is absolutely dry.
One Piece Drawn Brass Shell. Type 743 Dehydrators in the 6" length are drawn in dies so that they have only one joint—larger

Easy to clean! Easy to restore to original efficiency by merely replacing the dehydrant! These are your first reactions when you remember field problems encountered in servicing Refrigeration and Air Conditioning installations. Apart from the refillable feature, however, Type 743 Henry Dehydrator should be the choice of anyone interested in more efficient removal of moisture in a system. This is because many of the standard Henry features of design and construction that have made Henry Dehydrators the choice of the Industry are incorporated in this refillable dehydrator. You will find these features described in detail on the left.

Type 743 Refillable Dehydrator is available in a series of sizes and capacities that will take care of the majority of commercial installations. Best of all, the unit is so reasonably priced that it will pay any service or contracting organization to use it as standard equipment.

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APPROVED FOR NAVY, MARITIME COMMISSION AND ARMY USE

There should be no perceptible difference in height, since the cold oil film under the compressor rotor takes care of the end play clearance. Excessive end play can be taken up by lapping the compressor housing end, with valve grinding compound and oil on a glass plate. Check end play frequently when doing this operation so as not to overdo it.

After the end play is right, clean the parts and reassemble as before including the motor rotor and wiper blades which should fit snugly without binding. Adjust the side clearance by hitting the compressor housing near the frame with a hammer on the side where the muffler goes. It may be necessary to loosen the bolts slightly to get the housing to move. Turn the rotor after each blow. As soon as the compressor rotor starts to bind on the housing, stop hammering. There should be a slight bind each time a wiper blade passes the tight point. Any other high spot should be lapped down but be careful not to get any lapping compound in the bearings if this is done.

Tap the other side of the compressor housing until the rotor is just free to turn again without binding even slightly. Then the compressor is ready to reassemble and test. It takes a good deal of practice to do this job right the first time, so you may have to tear it down several times for adjustment.

Clean the compressor screen and check valve in the suction line and silver solder the motor rotor bars to the rings if there is any doubt about the condition of the motor rotor. With a rewound motor starter, this job will make a compressor unit that should work as good as a new one. *Submitted by—C. L. Carter, Pueblo, Colorado.*

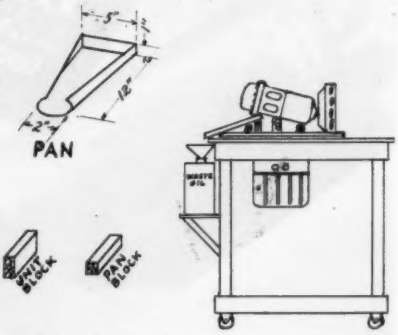
S S S

RIGID VISE SUPPORT

MANY shops having a heavy vise fastened to a bench find the weight of the bench inadequate to hold against heavy work. If the legs of the bench are anchored, the top may split. To overcome these objections, fasten a piece of angle iron to the floor with expansion bolts in cement or lag screws in wood flooring directly below the back bolt hole in the vise. Attach a large turnbuckle to the angle iron and put a long bolt through the bolt hole in the vise and into the threads of the turnbuckle. The bench legs should be of 4x4 timber to support the front of the vise. The turnbuckle can be tightened enough to permit the vise to withstand the tremendous torque of large pipe wrenches.—*Submitted by Frank Depagnier, City Island, N. Y.*

COLDSPOT OIL DRAIN PAN

REMOVAL of the Coldspot compressor housing without having the oil run out on the bench is easily accomplished with the aid of a pan made as shown here. The pan is made of sheet metal cut and shaped as shown.



When the housing is to be removed, the mounting springs on the compressor end of the unit are removed and a block of wood is placed under the motor as illustrated. The pan is then inserted under the compressor with the back end raised slightly to permit the oil to flow into a can provided for this purpose. *Submitted by—Harry W. Custer, Center Line, Mich.*

S S S

METHOD OF CHARGING SEALED UNITS WITHOUT VALVE KIT

PUMPING a vacuum on and charging hermetically sealed units can be done without the hermetic valve kit by drilling a 3/16 inch hole in the suction line as high above the compressor as is convenient. Flare a piece of one-quarter inch copper tubing, then pinch the flare so that it conforms to the suction line. Next, silver solder or light braze the copper tube over the hole in the suction line. Connect the one-quarter inch line to the center of a gauge testing manifold, then a vacuum pump can be connected to the compound gauge side and the service drum to the high pressure gauge side.

Testing for leaks, pumping a vacuum with an auxiliary vacuum pump, and charging the system can be readily accomplished by this hook up. When the unit is charged and checked, pinch off the one-quarter inch charging line and cut off the flare attached to the manifold, then solder. *Submitted by —Walter C. Jordan, Lethbridge, Alberta, Canada.*

That Cold Box You're Planning—

Will it have a handsome modern Dial Thermometer?

● If you are planning refrigeration equipment, particularly the "cold box" type, the Marsh organization is in an excellent position to produce dial thermometers that will grace your equipment—thermometers as accurate as they are attractive. Yet, thanks to modern production methods, we can supply them in quantities at a cost that you can justify in a highly competitive market.

If your present plans do not call for a thermometer, consider this sales building feature in the light of competition that is bound to come. An attractive dial thermometer is the costume jewelry of the refrigerating unit—and proof that the unit is doing its job right.

The thermometer illustrated is the Bi-metallic type, but special types and dials are available in quantity orders. No matter how unusual your design, Marsh engineers are ready to help you incorporate a thermometer that will add another effective talking point to your cold box. Write for further information today.

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MARSH *Refrigeration Instruments*

Electronic Device Speeds Defrosting of Frozen Produce

CONVERSION of a vital implement of war as an equally important accessory of the food industry looms on the postwar horizon with the development of an electric defroster which will thaw frozen foods almost instantly while preserving their taste, texture and nutritive value. High frequency heat, an electronic miracle which has already done yeoman war service in dehydrating army K-rations, has now been successfully harnessed by the nation's leading food distributor as a high-speed defroster of frozen foods in bulk.

"In much the same way that a radio station transmits sound, this device 'broadcasts' a beam of dielectric heat through solid block of frozen food, thawing it in minutes instead of hours or days." This, coming from H. W. Gilb, director of the A&P Food Stores' national bakery division which has been experimenting in the new field for nearly six months, means that a way has been found to minimize time as a major factor in the processing and cost of food.

"The net result of our efforts," Gilb said in announcing his findings, "will be to enable the industry to move perishables from producer to consumer in better condition than has ever before been possible."

Thawing of Peaches

The most recent dielectric test conducted by Dr. Cathcart at FTR's Newark (N.J.) laboratory resulted in successful quick-thawing of fully ripened peaches, which are among the most highly perishable foods. Thirty-pound cartons of the fruit, solidly frozen and normally requiring 20 hours to defrost safely, were thawed in less than fifteen minutes with the aid of the megatherm high frequency process.

The new defrosting method involves use of an "oven" in which the floor and ceiling are insulated metal plates or electrodes which are connected to a high frequency generator. Frozen food that is placed between these plates is subjected to dielectric heating which reaches the core of the frozen substance as well as its surfaces and induces uniform defrosting.

Another possibility for dielectric heat is indicated in the fact that it cooks as well as defrosts. Dr. Cathcart observed that if the defrosted food is allowed to remain in the "oven" after it is fully thawed, it actually begins cooking. Food prepared in this manner would be done in much shorter time and be uniformly well-done or rare throughout, just as the defrosting is uniform.

Defrosting by electronic means is achieved so rapidly, he said, that there is no chemical breakdown in the structure of the food such as occurs under normal thawing procedure. Thus, it is possible to retain the firmness and texture of tree-matured fruits and vine-fresh berries.

Other Defrosting Experiments

Dr. Cathcart expressed satisfaction with other recent experiments in defrosting frozen eggs. Storage of frozen eggs requires considerable space in large-scale bakery operations, and additional room is necessarily tied up by the tedious defrosting process. The new method, he said, will save thousands of hours of waiting time annually at A&P bakeries as frozen eggs and other ingredients move through quick defrosters into dough and batter mixers.

"Dielectric or high frequency heat represents the newest and most powerful weapon against waste and spoilage which characterize the old thawing methods," he said. "Aside from cutting time and space outlays, this new force prevents decomposition and discoloration which often occur when frozen foods are defrosted in water or at room temperatures."

Different foods require different amounts of thawing time, he pointed out. The quantity of a food being defrosted also affects the timing. For example, a barrel of frozen berries intended for baking or processing must now stand in room temperature for seven days before it can be emptied into the cooker. Even then, the heart of the barrel-load may still be frozen if many cold barrels are kept close enough to insulate each other. The dielectric oven will cut down the thawing time for such quantities of berries to one hour, with level defrosting throughout the barrel. As precise time schedules are worked out for various foods, the likely technique, said Dr. Cathcart, will be to place cartons or barrels on conveyor belts which will pass through the oven at a speed to be determined by the type of food being defrosted.

EVERY DFN DRIER RE-CHARGE IS "FACTORY FRESH"

DFN Cartridges are Hermetically Sealed —give Full-Strength Dehydration!

Whether you're installing the DFN System for the first time—or *servicing it for the fifth*—you're sure of full protection against freeze-ups, clogging and corrosion. Each mechanically-packed DFN Cartridge is a complete unit—dehydrated in controlled temperatures at our factory—kept at full strength by hermetic sealing—ready for use when wanted.

To service the DFN System, you merely take the old Cartridge out of the DFN Shell, and slip in a fresh one. No danger of drier adsorbing moisture from the air while servicing—no danger of loose packing to cause by-passing of refrigerant . . . both common when handling drying agents in bulk.

Ask your distributor or write us for Catalog R-7.

McIntire Connector Co., Newark 5, N. J.

Only the **DFN** SYSTEM

DEHYDRATES FILTERS NEUTRALIZES

DEHYDRATORS • STRAINERS FILTERS • NEUTRALIZERS

COLDSPOT MANUAL

(Continued from page 38)

starts, the pointer will hesitate a few seconds and then drop almost instantly to 10 or 15 pounds pressure. It will then pull down slowly to some point below zero. This may take several minutes to reach the lowest point. When the pressure for which the expansion valve is set is reached, the valve will open and the resulting increase in pressure will cause the pointer to jump up slightly. The movement of the pointer as the expansion valve opens and the gas is pumped out may be almost imperceptible, or it may amount to several inches on the vacuum scale, depending on the condition and the variation in expansion valves. The pointer will continue this movement until the machine stops, and the lowest point to which the pointer is pulled may be said to be the vacuum at which the machine is operating. When the machine stops, the pointer will immediately swing up to show pressure. This pressure will be about 15 less, numerically, than the room temperature in degrees Fahrenheit. That is, in an 80 degree room, the pressure will be about 80 minus 15 or 65 pounds. At 60 degrees, the pressure will be about 20 less, and at 100 degrees about 10 less, than the room temperature. During the idle period, the pressure may remain constant or may fall off about 10 pounds, depending on conditions and mechanical irregularities. On some perfectly normal units it has been observed to build up slightly.

(To be concluded)

REFRIGERATOR OWNERS MAKING MISTAKE BY NEGLECTING REPAIRS

HOUSEHOLD refrigerator owners apparently have concluded that they will soon be able to purchase a new refrigerator from the 530,000 mechanical refrigerators to be built in the last half of 1945. This conclusion has been reached by R. J. McKenty of Rex Cole, Inc., secretary of the Refrigeration Service Managers Association of Greater New York.

Mr. McKenty reveals a marked reduction in the number of service calls for refrigerator repairs for this time of the year. He feels the owners of refrigerators are misinformed on the possibility of replacing their refrigerator, since all those made this year will be consigned to the government.

"At the present time the service organizations are able to take care of normal seasonal demands," says Mr. McKenty, "whereas a year ago conditions in the repair industry were desperate. Parts are coming through fairly well without serious delay and manpower is about adequate for normal business. However, a sudden increase will impose abnormal conditions again."

These conditions that prevail in New York no doubt are repeated many times all over the country. A sales campaign on the part of service engineers in their local community would not be amiss at this time to awaken the owners to the true facts of reconversion in the refrigeration industry.

WPB ISSUES SUSPENSION ORDERS AGAINST REFRIGERATING CONCERN

TWENTY-ONE suspension and 22 consent orders, involving violations of War Production Board limitation and other control orders, have been announced by WPB, among them being the following:

The Jordan Refrigerating Co., 237 North Broad St., Philadelphia, Pa., was charged with the manufacture and assembly of 55 new refrigerating systems, without authorization from WPB, and delivery of 17 new refrigerating systems on orders not bearing preference ratings. The company is forbidden to apply or extend any preference ratings for refrigerating systems, equipment or parts, unless otherwise authorized by the board, until September 16, 1945.

Frozen Food Refrigeration Co., Memphis War Industries and Frozen Food Locker Construction Co., Inc., 2165 Lathan Ave., Memphis, Tenn., between July 31, 1944, and January 2, 1945, extended to suppliers the preference rating AA-3 and allotment symbol V-9 to obtain 43 condensing units to be used for purposes other than those provided for by the rating and symbol. The companies are forbidden to sell, deliver or install any of the 40 such units now on hand except upon orders bearing a preference rating of AA-3 or higher.

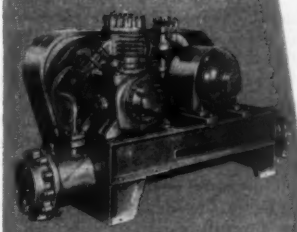
Moore-Griggers Co., Ltd., 240 Peachtree St., Atlanta, Ga., used a preference rating of AA-4 on an order to obtain 25 three-hp. and 50 five-hp. air conditioning units although it was only authorized to use the rating to obtain five of each. The company was ordered not to sell, deliver or install any of the excess units (20 three-hp. and 45 five-hp.) except on orders bearing a preference rating of AA-3 or higher.

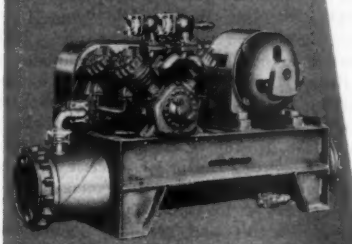
When you're up against a tough one...

TURN TO

GE

CONDENSING UNITS





RIGHT now, you can get G-E Condensing Units—in sizes ranging from 1/6 to 125 hp.—for all essential applications. And you can *recommend* G-E Condensing Units, with full confidence, for the *toughest* job. The G-E name wins ready acceptance from your customers ... and the units perform with the high efficiency and complete reliability vital in refrigeration applications.

Economy, dependability, long service life—these are outstanding features for which G-E equipment has long been famous. But there's a still further advantage. Rating for rating, G-E units *occupy less space* than most other makes. In replacement jobs, that means you can frequently install a higher capacity unit in the same area, providing additional safeguards against costly breakdowns. In new installations, the compactness of G-E equipment conserves valuable storage or sales space.

Get the full facts now on this complete line of condensing units. Write *General Electric Company, Air Conditioning and Commercial Refrigeration Divisions, Section A17, Bloomfield, New Jersey.*

BUY... and hold ... WAR BONDS

GENERAL ELECTRIC

Tune in: "The G-E HOUSE PARTY," every afternoon Monday through Friday, 4 p. m., E W T, C B S ... "The G-E ALL-GIRL ORCHESTRA," Sundays, 10 p. m., E W T, N B C ... "THE WORLD TODAY" News, Monday through Friday, 6:45 p. m., E W T, C B S

TRAINING FILMS ON SERVICE NOW AVAILABLE

THROUGH the efforts of men in the refrigeration industry and Hollywood producers working with the U. S. Office of Education, training films on both commercial and domestic refrigeration service are now available. The films are 16 m.m. prints produced by Graphic Films, Inc., Frederick K. Rocket Co. of Hollywood and Anson Bond Productions, Los Angeles.

The advisory committee was composed of Dr. R. L. Daugherty, California Institute of Technology; Dr. David Jackey, California State Department of Education; Charles L. Walling, Secretary Refrigeration Contractors Association of L. A.; Thomas F. Carter, Chief Engineer of Baker Ice Machine Co., Los Angeles; Harold L. Halls, manager Refrigeration Service, Inc., Los Angeles; Harry L. Bowe, foreman Arden Farms Refrigeration Shop, Los Angeles; Jesse C. Blair, refrigeration and air conditioning teacher at the Frank Wiggins Trade School, Los Angeles.

The first public showing was recently made in Los Angeles to a group of about 400 refrigeration contractors, jobbers, engineers, service engineers, and instructors. Mr. Walling outlined the program from its beginning when the WMC placed refrigeration service men on the critical list.

S S S

PROPOSED TRADE PRACTICE RULES MADE PUBLIC BY F.T.C.

PROCEEDINGS for establishing fair trade practice rules were recently undertaken by the Federal Trades Commission upon application from members of the low pressure refrigerant industry. According to a bulletin released by the F.T.C., these rules were proposed to apply to the industry's refrigerants having a vapor pressure of not more than 100 pounds per square inch at 70 degrees Fahrenheit.

The proceeding is directed to the establishment of comprehensive rules in the interest of maintaining free and fair competition and providing protection to the public as well as to the industry against unlawful or harmful trade practices.

The proposed rules set forth govern the manner in which low pressure refrigerants can be advertised, sold, and/or the type of shipping containers to be used. Price fixing, discrimination and many other rules are covered in the FTC release prior to their final action on the proposed rules.

REFRIGERATOR ON WHEELS!

FIRST of its kind to go into service, the new Fruehauf refrigerator van, illustrated on the front cover of this issue, equipped with built-in "Trail-aire Conditioner," is used by Deitch of Detroit, distributors of Honor Brand Frozen Foods, for overnight shipments from Detroit to warehouses in Chicago, Cincinnati, Indianapolis and St. Louis. The compact Fruehauf Trail-aire unit in the nose of the trailer maintains a constant temperature with an air circulation of 1500 cu. ft. per minute, and can be used to supply either heating or cooling, as needed. It operates with the mere push of a button, and does away with the nuisance and expense of ice, brine or charcoal heaters. The trailer, which is completely insulated, is a 30-foot, tandem-axle model, carrying loads that average 30,000 pounds.

S S S

FLOODS AND WATER SHORTAGE

FLOODS and water shortage are both recurring in this country. Floods are an example of water going to the wrong place. Too much of it is going over land instead of under ground. Steps are being taken to remedy the situation but their effect is not yet evident.

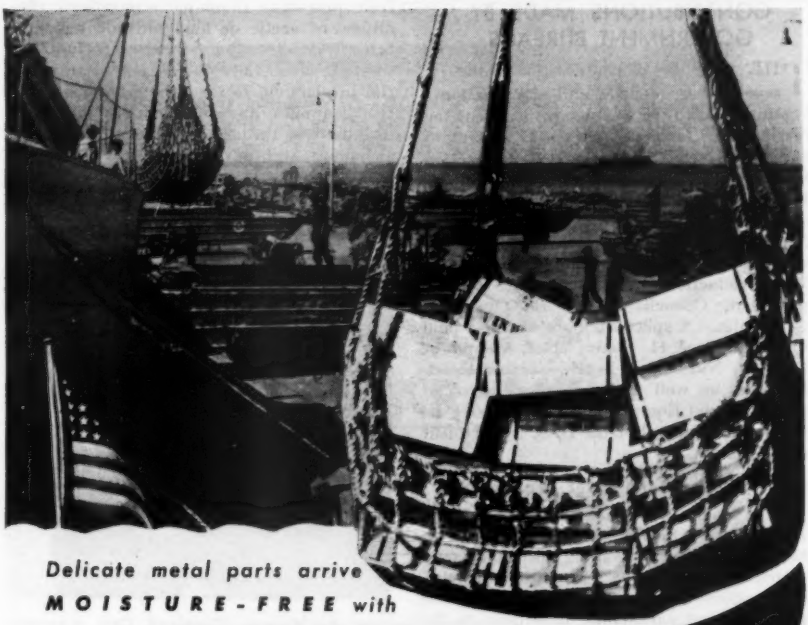
Meanwhile the value of water conservation measures becomes more and more apparent. Instead of using city water directly more of the larger refrigeration installations will be equipped with cooling towers or evaporative condensers. While overall plant costs will increase the saving in operating expenses will in most cases make the water conservation measure sound from an economic standpoint and the industry will be benefited as a result.

S S S

OVER-FUSING CAUSES FIRES

THE recently enacted Oklahoma City commercial refrigerator ordinance is still a matter of controversy among councilmen for the city. In an effort to determine the necessity of annual inspection, the council referred to fire department records which revealed 58 fires since January 1944 attributed to the over-fusing of electric motors on refrigerating equipment. Damage ranging from $15.00 to $28,500.00 has been attributed to this one common occurrence according to G. R. McAlpine, fire chief.

The original ordinance failed to provide the necessary enforcement powers.



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***MOISTURE-FREE** with*

Joliet SILICA-GEL

The ideal drying agent....

THOUSANDS OF PACKAGES of delicate, precision metal parts are being delivered to our fighting fronts . . . moisture-free and rust free . . . because of Joliet Silica Gel.

The power of crystalline Joliet Silica Gel to absorb atmospheric moisture within containers is almost phenomenal. Its drying action prevents rust and corrosion. Moreover, it is widely used as a drying agent in cartons and boxes of foods, fabrics, chemicals and other commodities.

Joliet Silica Gel is strictly a quality product. It is clear white; passes a rigid section test; meets exacting government specifications. Write today for full information.

Opportunity for Jobbers

There are excellent opportunities for jobbers to build profitable business on Joliet Silica Gel in a few territories. Write for details.

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INDUSTRY AVENUE
JOLIET, ILLINOIS

NRSC RECOGNIZES CONTRIBUTIONS MADE BY GOVERNMENT BUREAUS

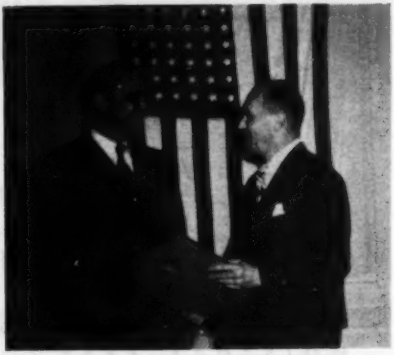
THE very major contribution made by several war agencies and other national organizations to the wartime problems of the refrigeration repair industry, was recognized at a luncheon of the National Refrigeration Service Council, held June 20 at the Statler Hotel, where special presentations were made to Paul V. McNutt, Chairman, War Manpower Commission, Dr. W. Y. Elliott, vice chairman for Civilian Requirements, War Production Board, and T. P. Walker, president, Council of Electric Operating Companies. A special tribute was also paid to Col. George H. Baker, chief, Manpower Division, National Selective Service Headquarters, as well as to representatives of the Industrial Equipment Branch, War Production Board, and of the U. S. Department of Education.

Talk on Manpower Problem

Ray Kromer, Chairman of the National Refrigeration Service Council, presided at the meeting and in making special awards, stated that in common with most industries, the problem of manpower during the war period was of paramount importance to the refrigeration industry. He brought out that retention of those skilled mechanics whose years of training and experience were required to analyze the needs of equipment requiring repairs, to specify the necessary steps to be taken, and to train apprentices who would be available to fill the vacancies of skilled mechanics entering the armed forces, presented a very serious problem. He stated that both of these phases of the industry's manpower problem had been recognized by the war agencies, and with their assistance, a nation-wide training and recruiting program was organized through which men could be hired and given a basic training in refrigeration.

"Refrigeration in wartime is of major importance," he said, "not only directly in the war effort, but in the home front economy supporting the war effort. Refrigeration equipment was among the first items to follow the troops as they landed on our invasion fronts: blood plasma, serum and similar medical supplies were essential." He brought out also that refrigeration for food preservation is essential not only for the safety and health of both civilian and fighting forces, but for the conservation of limited food supplies.

Mr. Kromer stated also that all the way from providing simulated atmospheric conditions of arctic or high altitude temperatures for the testing of air craft function, through industrial processes of war material production, to the preservation of vital food supplies for in-plant feeding, food distribution through wholesale and retail channels, and into the homes of war workers and civilians, refrigeration equipment made a major contribution to the success of the nation's war program.



W. Ray Kromer, Cleveland, Ohio, Chairman National Refrigeration Service Council prior to its dissolution, June 30, receives engrossed scroll from Harry Alter, Chicago, as a testimonial from the Council Members.

"Equally as important as production of new refrigeration equipment," Mr. Kromer said, "was the provision for manpower to repair and maintain this equipment in efficient operating condition, and to keep in operation the millions of existing refrigeration units in storage, warehouses, retail outlets and homes throughout the country.

"Without manpower for maintenance and repair of refrigeration equipment," he said, "the industry could not have continued to provide its essential services. Through the cooperation of the several war agencies, that minimum of manpower was provided for repair and maintenance which, in spite of the difficulties resulting from limitations on repair parts, demands of the armed forces, and the increased requirements imposed by the war effort, was able to meet the demands of the armed forces, war production and the civilian economy."

Others present at the meeting were: Webster Powell, International Labor, Social & Health Affairs Division, Department of

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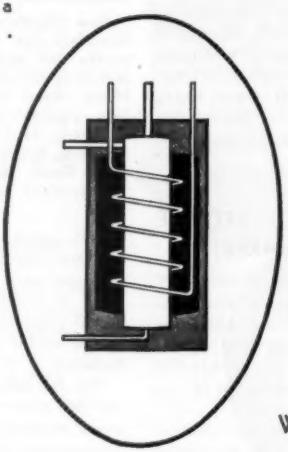
With the THERMOBANK a low temperature system is just as automatic as a 40° system . . . . .



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KRAMER TRENTON COMPANY

Trenton, New Jersey

State, formerly Manpower officer, Office of Civilian Requirements; Phillip S. Van Wyck, Director, Bureau of Training, War Manpower Commission; John J. Tessari, Chief, Technical Service Division, Bureau of Training, War Manpower Commission; Robert N. Webb, Information Specialist, War Production Board; Curtiss E. Anderson, Chief, Business & Repair Service Branch, Service Trades Division, War Production Board; Gerald W. Weston, Chief, Electrical and Mechanical Repair Section, Service Trades Division, Office of Civilian Requirements; F. B. Millham, Assistant Director, General Industrial Equipment Division, War Production Board; C. M. Stewart, Chief, Special Equipment Branch, General Industrial Equipment Division, War Production Board; Col. Chas. M. Piper, Vice President, Al Paul Lefton Advertising Company; J. G. Bariesas, Assistant to the President, Council of Electric Operating Companies; F. J. Kelly, Chief of Division of Higher Education, U. S. Department of Education; L. S. Hawkins, Director of War Production Training Program, U S. Department of Education; Wm. G. Hills, Managing Director, The Electric Institute of Washington; and representing the National Refrigeration Service Council: Warren Farr, Cleveland, Ohio; George Roche, Baltimore, Maryland; and J. S. Bartlett, Washington, D. C.

S S S

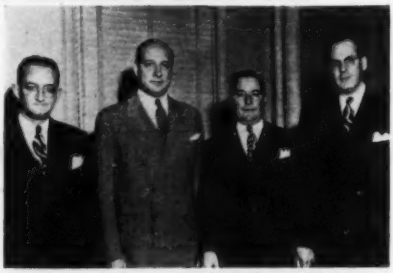
REFRIGERATION PARTS TO PROVIDE HUGE POSTWAR MARKET

IN ADDITION to the huge demand for new mechanical refrigeration and air conditioning equipment after the war, American business, commercial and industrial establishments will spend millions of dollars for repair, modernization and expansion of existing equipment.

More than $70,000,000 in new parts will be required, and to that sum will be added many millions in labor and engineering services, most of which will be supplied by the nation's refrigeration and air conditioning service firms.

These facts were disclosed by F. J. Hood, newly-elected president of the Refrigeration Equipment Manufacturers Association who based his $70,000,000 estimate on a recent report to the organization by H. T. McDermott, secretary of the Refrigeration Service Engineers Society. All of the 76 members of the Refrigeration Equipment Manufacturers Association produce parts and refrigerants and more than one third of them also manufacture complete refrigerating or air conditioning units and systems or both.

As an example of the existing situation in major industries, Hood pointed out that over half the refrigerating equipment used by the meat industry is 15 years old or more. This means, he said, that a large percentage either is badly in need of repair or should be replaced as soon as possible.



New officers of the Refrigeration Equipment Manufacturers Association who were elected at the first meeting of the new board of directors in Chicago May 24. Left to right: F. J. Hood, Ansul Chemical Company, Marinette, Wis., president; H. F. Spoehrer, Sporlan Valve Company, St. Louis, vice-president; Edward M. Flannery, Bush Manufacturing Company, Hartford, Conn., secretary, and J. A. Strachan, Weatherhead Company, Cleveland, treasurer.

"The great strides made in refrigeration and air conditioning since the start of the war and as a result of wartime needs will make it worthwhile for many concerns to install complete new facilities, so great will be the dollar-for-dollar advantages," Hood declared.

"On the other hand, it may take years for our industry to catch up with the accumulated demand for new equipment of all types, and often it may be advisable to repair, enlarge or modernize present installations, even if on a temporary basis. Then, thousands of comparatively new prewar installations will require servicing attention, at least to some degree.

"All this adds up to the fact that the industry will be as busy making parts as it will be in producing complete new units. And refrigeration and air conditioning service concerns will be hard-pressed to meet the requirements of their customers—already they are in need of additional manpower."

SERVICING THE *Meter-Miser*

IS PROFITABLE BUSINESS WHEN YOU CAN HANDLE IT

Every well equipped service shop will find it can make extra profits by being able to service Meter-Misers. Plan on getting this business for your own shop this year. Meter-Miser users added to your list of customers will add profits and build good will in your community.

HERVEEN

the IDEAL REPLACEMENT GAS

Six years proven service

In April 1939 we formally announced this refrigerant. Since that time many thousands of Meter-Misers have been operating satisfactorily with HERVEEN. More and more service men are finding it meets their requirements and is making friends among Meter-Miser owners.

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Individually tested for efficient, economical operation. WP regulating valves may be mounted in any position and will give lasting, trouble-free performance. Brass body, two ply power bellows and corrosion resistant materials for all internal parts. They are designed not only to start and stop the flow of water but also to feed the economic amount of cooling water to secure the proper condensing pressure without waste. The water flow increases and decreases with the rise and fall of actuating pressure.

WP regulating valves are available in ⅜", ½" and ¾" FPT sizes and other valves of other types are available in sizes ranging from ⅜" to 2" FPT.

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CONDENSING UNIT MANUFACTURERS COMPLETE ORGANIZATION GROUP

REPRESENTATIVES of the nine member companies of the Refrigeration Condensing Unit Manufacturing Association, which composes the Product Section of the Refrigeration Equipment Manufacturing Association, completed the organizational structure of this new group and appointed committee personnel at their meeting at Cleveland, Ohio, June 26th.

B. J. Scholl, Sales Manager of the Brunner Manufacturing Company, Chairman of the meeting, made the following committee appointments for the year:

Committee on Public Education: Chairman, Sterling F. Smith, Mills Industries, Inc. *Committee on Engineering:* Chairman, C. E. Ploeger, Servel, Inc.; S. R. Hirsch, Brunner Manufacturing Co.; A. Banyai, Lehigh Foundries, Inc. *Committee on Export:* Chairman, P. A. Karl, Brunner Manufacturing Co.; H. C. Morrison, Curtis Refrigerating Mch. Div.; Arthur Rocke, Lynch Manufacturing Corp.; E. C. Pangburn, General Electric Co.; *Committee on Market Study:* Chairman, R. L. Sears, Lynch Manufacturing Corp.; C. L. Olin, Servel, Inc.; J. C. Miller, Lehigh Foundries, Inc.

Of considerable interest to the representatives in attendance, and to the entire trade, were the remarks of Mr W. Y. Rahan, vice-president of the Commercial Credit Corporation, who expressed the belief that owners of war bonds would hold them for maturity, and that most purchases would be made on installments out of income.

Mr. Rahan outlined a plan for installment selling of commercial refrigeration equipment which has had wide acceptance. This plan calls for a minimum down payment of 25% of the contract exclusive of trade-ins and a maximum of 18 monthly payments.

A proposal that repair parts be packaged and properly labelled for protection and quick identification on jobbers' and distributors' shelves met with considerable favor. Plans for the production of packaged repair kits were also disclosed by several members.

The members also discussed uniform installation, and service instructions, jobbers' relations and catalogues, export problems, labor relations and the new OPA plan for the consideration of requests for price increases by manufacturers.

The association plans another meeting in the Fall.

Some Men Just Don't (Won't or Can't) See—

CERTAINLY there are plenty of men in refrigeration who don't, won't or can't see any need for supplementing what they already know with U.E.I.

BALANCED TRAINING

Funny part of it is that these fellows do seem to get by somehow. BUT consider men—in sales, service, administrative, and executive jobs in refrigeration—who have not been content to merely get by! They have fortified themselves with training—the kind of practical, sensible U.E.I. training which for the past 18 years has been helping men get farther faster in practically every branch of refrigeration. How would you bet on *them* in 1945? Do you think they'll make more money than the boys who "know it all"?

The main point is this: If you sincerely believe you can make more headway in your refrigeration job or business with the help of more knowledge—knowledge which you can get through home study plus actual shop work—and if you are not wearing a set of blinders which keep you from seeing the whole picture of the future in refrigeration, we invite YOU to write for free FACTS about U.E.I. training.

MAIL THIS COUPON TODAY

FREE FACTS

UTILITIES *Engineering Institute*

1314 W. Belden Ave.

Dept. 45, Chicago 14, Ill.

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City..... Zone.... State.....

BEN-HUR FARM & HOME FREEZERS

A POST-WAR DREAM THAT WILL COME TRUE FOR BEN-HUR DEALERS

THE NEW "BEN-HUR" Farm & Home Freezer is no *dream*—it has been fully proved and tested under every operating condition — ready to open a tremendous sales and profit opportunity for you. Market research shows that the post-war home freezer demand will require over 500,000 units a year!

A COMPLETE LINE — to meet every consumer need, will be available to you in the new "BEN-HUR" Farm and Home Freezers. Begin NOW to plan serving this great pent-up demand for home freezing and storage.

Get In On The Ground Floor by writing BEN-HUR today regarding distributorships available.

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BEN-HUR FARM & HOME FREEZERS

Refrigeration Service Engineers Society

Official Announcements of the activities of the International Society and Local Chapters appear in this department as well as articles pertaining to the educational work of the Society.

THE OBJECTS OF THE SOCIETY

To further the education and elevation of its members in the art and science of refrigeration engineering; for the reading and discussion of appropriate papers and lectures; the preparation and distribution among the membership of useful and practical information concerning the design, construction, operation and servicing of refrigerating machinery.

INTERNATIONAL HEADQUARTERS: 433-435 North Waller Ave., CHICAGO 44, ILL.

NEW ENGLAND STATES ASSOCIATION FORMED

DELEGATES from the several Chapters and temporary officers of the New England States Association R.S.E.S. met and completed the association. Those in attendance were: L. W. Pierce, Boston; Frank H. Tarala, Hartford; John Brosnan and Robert Davis, Worcester; Howard Hough, Providence; James Vye, Springfield; Arthur S. Murphy, New Haven; Charles C. E. Harris, former president of Mass. State Chapter, and the temporary officers.

The temporary officers were chosen to continue in office until the first annual convention at which time a regular election would be held. Tentative plans were laid to hold the first convention in November, 1945, if circumstances permit.

CHICAGO CHAPTER HAS PICNIC

MEMBERS of Chicago Chapter and their families and friends declared a holiday on July 1 to attend a picnic at the White House Picnic Grove, Irving Park Blvd. and River Road. Plans had been under way for several weeks, headed by Martin E. Brunderman as chairman. The general theme of all publicity releases was "Refrigeration Takes a Holiday."

The crowd started arriving shortly before noon and continued to arrive for several hours. Those who arrived by mid-afternoon were in time for the baseball game which proved to be of considerable interest to both the spectators and the players. Prior to this main feature, a ball game was played between the younger boys and girls with the girls only losing by one run.

Bingo was quite an attraction for the ladies while the ice cream and pop stand did a thriving business with the youngsters that rivalled the activity of the beer dispensers.

Many useful and valuable prizes were raffled throughout the afternoon in between games for old and young.

WISCONSIN STATE ASSOCIATION PICNIC SCHEDULED

SERVICE engineers and their friends are looking forward to an enjoyable day at the annual picnic sponsored by the Wisconsin State Association, R.S.E.S. Plans are completed to have the affair in Burroughs Park, bordering on Lake Mendota, Madison, Wisconsin, on August 12. The park offers very fine facilities for such a gathering, having a private beach and adequate facilities for such a gathering. The entire park has been reserved for the day.

Fair weather has favored former picnics at Madison. This year, the committee has not pressed their luck because Burroughs Park has adequate shelter in the event of a storm. Lunch and dinner will be served. The committee suggests bringing your own tableware (not Grandma's sterling) to avoid appointing a dishwashing committee.

In former years, Madison Chapter has built up friendly rivalry with Rockford Chapter in a baseball game. They're hoping to have a good game this year. Other games will be played for those who do not play ball. Facilities for swimming and fishing are good at Lake Mendota. R.S.E.S. members and their friends from everywhere are invited to be present.

ICE-X quickly cures emergency freeze ups when ice forms at the expansion valve or capillary tube. Harmless to use. Great for Freon, Carrene, or Methyl Chloride systems . . . The dependable liquid anti-freeze.

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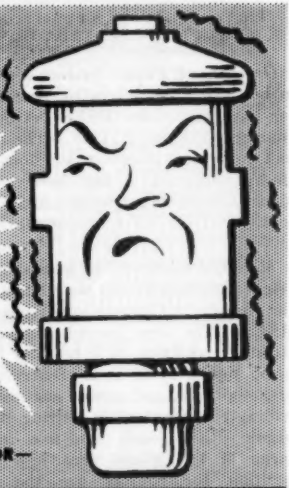

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JOBBERS: WRITE FOR SPECIAL PROPOSITION!

REFRIGERATION PARTS

Rebuilding and Exchange

- COMPRESSORS
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- WATER VALVES
- CONTROLS
- EVAPORATORS
- FLOAT VALVES

Send Today for This Useful Catalog

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Fully illustrated catalog packed full with valuable information and prices sent upon request on your company letterhead.

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321 EAST GRAND AVENUE • CHICAGO 11, ILLINOIS

NEW CHAPTERS PETITION FOR CHARTERS

Greensburg, Penn.—Sixteen men interested in bettering themselves by becoming Chapter members in the RSES petitioned for a charter on June 5, 1945. These men had met on several previous occasions to discuss the possibilities. They have selected the name, Greensburg Chapter and have representation from seven surrounding towns.

Miami, Florida.—For several months, refrigeration men in and near Miami discussed the forming a Chapter under charter of the RSES. The idea gained momentum from its start resulting in a petition for charter being signed by 58 men. Distributors, dealers, engineers, and service engineers have all willingly cooperated in getting the Chapter organized. Among the five members-at-large in the Miami area who signed the petition for charter are the temporary officers chosen. The officers are: J. D. Nall, *Chairman;* R. S. Smith, *Vice-chairman;* Al Plaag, *Secretary-Treasurer.*

San Francisco, Calif.—Refrigeration service engineers in the Golden Gate area have recently petitioned for a charter to the International Society. Under the guidance of John Schlemmer, the Golden Gate Chapter has been formed and is now actively functioning in assisting the city of San Francisco to prepare an ordinance governing refrigeration. Twenty-four men including members-at-large have already joined the Chapter and Mr. Schlemmer anticipates many more will soon be interested.

Portland, Oregon—Considerable interest has been expressed over the past few months by refrigeration men in and around Portland to form a Chapter in the Refrigeration Service Engineers Society. Final action has recently been taken and the petition for charter under the name Multnomah Chapter has been signed by many interested men.

The organization work has been largely the responsibility of H. F. Teel, RSES member since 1939. At a recent meeting the following temporary officers were elected: W. A. Fugelson, *President Pro-Tem;* Wayne Harrington, *First Vice-President;* Paul Kringelhide, *Secretary;* W. Gibson, *Treasurer;* Bill Francis, *Sergeant-at-arms.*

The next meeting is planned for July 18th, at which time additional names are expected to be put on the membership list.

Corpus Christi, Texas—An active group of refrigeration men, known as the Corpus Christi Refrigeration Association of Corpus Christi have recently petitioned for a charter to the Refrigeration Service Engineers Society. This Association felt that more could be accomplished by affiliation with the International Society. Organization details having been completed under their former name, the members met with H. T. McDermott, International Secretary, on May 7th to discuss details in making the changes. D. R. Locher has ably handled much of the correspondence and obtained necessary information in arranging for the service engineers to affiliate with the International Society.

Sacramento, Calif.—Through the progressive efforts of Gerald S. Kennedy, a charter was granted to the Sacramento Valley Chapter. Sixteen men gathered together with the purpose in mind of creating better feeling and elevating the refrigeration service business to its rightful place of recognition. The members of Sacramento Valley Chapter are in accord with the aims and purposes of all RSES Chapters to elevate the refrigeration service engineer in the knowledge and practices of good business.

Salt Lake City, Utah—91 men from Salt Lake City, Ogden, Provo, and the surrounding area gathered at a banquet meeting given to interested parties by Leland Flint, Flint Distributing Co. Not only did Mr. Flint supply the fine dinner but he provided a meeting place as well. The petition for charter was signed by 46 men at the dinner and since that time nine more signed before submitting the petition to the International Society. The full membership is very enthusiastic and cooperative.

J. L. Driskell, Manager of Refrigeration Service Co., Burley, Idaho and regional director for RSES attended this and a subsequent meeting to help get the Chapter under way. Temporary officers elected are: Erne Greetham, *President Pro-Tem;* Theo. W. Beck, *First Vice-President;* Don J. Baird, *Second Vice-President;* Arthur Grange, *Treasurer;* Sam Richards, *Secretary;* William W. Walker, *Educational Chairman.*

Carmel, Calif.—Shortly after the Monterey County Refrigeration Association was formed, a meeting was held in which it was decided to petition the RSES for a charter.

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1 pint bottle	3.00	24 bottles	
1 quart bottle	5.00	12 bottles	
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After due consideration had been given, a petition for charter was forwarded to the International Society. The charter was granted and now an active Chapter known as Monterey County Chapter has been added to the long list of Chapters throughout the United States and Canada.

Acting officers of the Chapter are: Robert McDonald, *President Pro-Tem;* and Jack Lannon, *Secretary-Treasurer.*

R.S.E.S. Chapter Notes

WOLVERINE CHAPTER

Lansing, Mich., May 28—After the regular business had been taken care of, an interesting picture on Frigidaire equipment was shown by E. M. Berglund of Frigidaire, Detroit.

June 11—The educational program was opened as a discussion on refrigeration motors by the various members. The regular scheduled speaker was not able to attend due to a death in his family.

It was suggested that the Chapter propose a joint meeting with Flint Chapter in the near future.

MAGNOLIA CHAPTER

Jackson, Miss., June 13—The regular meeting was held at Nelson Appliance and Tire Company. After the business session, an interesting film on Stericold lamps was shown by A. E. Shafer, Chapter president.

WESTERN MASS. CHAPTER

Springfield, Mass.. June 28—At this meeting the following officers were elected for the year:

James Cargel, *President;* Walter L. Wilson, *First Vice President;* Thomas Spedding, *Second Vice President;* H. C. Lambert, *Secretary;* Bruce Orton, *Treasurer;* Albert P. Snow, *Sergeant-at-arms;* Ben Lindberg, *Educational Chairman.*

COLUMBUS CHAPTER

Columbus, Ohio, May 14—The meeting was in the nature of a party given by the Williams Company and the Mason Supply Company of Columbus. Over 60 members and guests attended and had an enjoyable time. This was the last meeting held until fall when regular activities will again be resumed.

One member of the Chapter, A. M. Rose, had just recently been liberated from a German prison camp.

TWIN CITIES CHAPTER

Saint Paul, Minn., May 2—The meeting was a dinner meeting held at the Granada Cafe, Minneapolis with 67 members and their wives and guests present.

Due to Earl Sigafoos, Treasurer, entering the Navy the president appointed George Gartner as the new treasurer.

Plans were completed for the fifth annual picnic to be held July 15th.

The speaker of the evening, J. D. Winter, Horticulturalist in charge of the frozen food laboratory, University of Minnesota, gave a fine talk on the preparation and freezing of frozen foods. Data presented was the result of extensive research. Mr. Winter presented those in attendance with the printed data that formed the basis of this talk.

Minneapolis, June 5—After the regular business was attended to, C. A. McCafferty introduced several visitors and out-of-town members.

Joe Porupsky reported proposed changes in the Minneapolis City Ordinance and Jack Ehlers reported on the progress of the Saint Paul proposed ordinance. The July meeting date was changed to the 10th by the board of directors to accommodate Professor Land of the University of Minnesota whose topic will be "Insulation." Mr. McCafferty is making arrangements to have an equipment demonstration and talk by Liquid Carbonic Corp. for the August meeting. Three active and four junior membership applications were accepted.

Springfield Chapter dedicates service flag to honor members in the service. Standing: Adolph Pasquale, J. K. Farrelly, Archie Fait, Kennoth Beatty, Eugene Kresse. Seated: Mason Poole, Jim Kline, Ed Greig, J. Stoppelwerth, Master Jeff Potter, Dick Potter, J. Pokora. The gold star in the service flag is in honor of David Winters who was killed in the Pacific theatre.

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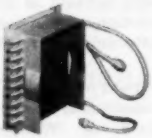

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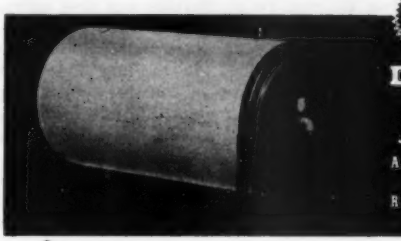

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BOSTON CHAPTER

Boston, Mass., May 8—In addition to regular business, the Chapter accepted two new junior members and received applications from four other men desiring membership.

L. W. Pierce, President, was appointed as delegate to the May 22nd meeting of the New England State Association. Dick Seddon was appointed alternate delegate to attend the meeting.

The meeting was then turned over to William Paulin, educational chairman, who introduced Harry Haywood of Welders Supply who talked on silver brazing and offered to demonstrate brazing methods to anyone interested. Chapter meetings are to continue through the summer at the request of the members.

YOUNGSTOWN CHAPTER

Youngstown, Ohio, June 12—The business of the meeting constituted election of officers for the following year. Those elected were: E. H. Grocott, *President;* Arthur Morgan, *Vice President;* Oscar S. Taub, *Secretary-Treasurer;* Ernest Welty, *Sergeant-at-arms.* After election the new officers were inducted.

COWTOWN CHAPTER

Fort Worth, Texas, June 21—The meeting was held at the Hotel Texas in which a discussion of co-operative advertising predominated. A committee was formed to obtain details and present a plan. Mr. Dunagan of the Texas Electric Service Company then showed a Technicolor film produced by Westinghouse on "How to Approach the Customer in Making Electric Appliance Repairs." He also showed a film "Assault on Angaur" produced by the Signal Corps.

KANSAS CITY CHAPTER

Kansas City, Mo., June 6—After conducting the regular meeting in which one active and one junior member were accepted and changing of the July meeting date from the 4th to the 11th, the meeting was then opened to the educational feature.

The ladies auxiliary were invited to attend and hear Mrs. Leta M. Strong from the Home Service Department of the Kansas City Power and Light Co. Mrs. Strong conducted an interesting meeting on preparing vegetables, fruits, and meats for freezing. Her lecture was augmented by charts on the subject. After the talk, she showed a General Electric picture on "Frozen Foods: How to Prepare, Freeze, and Cook."

MILE HIGH CHAPTER

Denver, Colo., June 11—Twenty-five members and their guests attended the meeting. The discussion centered around information presented by J. M. Richey, member of the Service Improvements Advisory Committee. Mr. Richey explained the aims of the committee and asked for opinions on a questionnaire prepared by its members.

The balance of the meeting was devoted to the election of officers for the following year. Those elected were: L. W. Barley, *President;* W. F. Hemphill, *Vice President;* R. C. Kimmel, *Secretary-Treasurer;* Roy Roush, *Sergeant-at-arms.* After the meeting adjourned, refreshments were served.

ROCKFORD CHAPTER

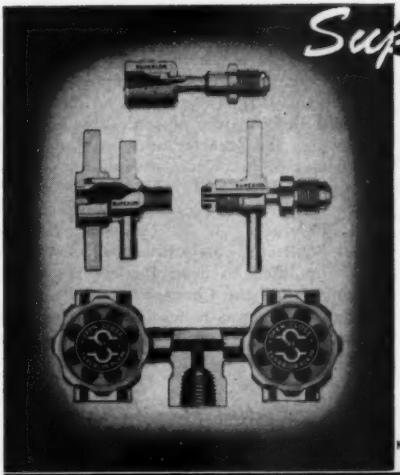
Woodstock, Ill., May 21—The meeting was called to order by the President, Mr. Carlson, at Woodstock, Illinois in the new shop and display room of Raymond Kruse. Fourteen members attended from Rockford, one each from Madison, Beloit, Lake Geneva, and the Acting National President and his wife, Mr. and Mrs. Clarence Buschkopf from Beaver Dam, Wisconsin, Mr. and Mrs. Gustave A. Larson from Milwaukee, and five visitors. Mr. Larson furnished some of the refreshments. The ladies and their visitors were entertained by Mrs. Kruse while the RSES inspected Mr. Kruse's fine new building and played cards. The ladies auxiliary then served a lunch consisting of sandwiches, cake, ice cream and coffee. A short business meeting followed. The 5x5 was drawn for Mr. Clover but he was not eligible. The attendance prize was won by Roy Shipman.

A letter was read by the president from the chapter's member, Ward Minors, who has accepted a position in Minnesota. In the early morning hours all bid the Kruses good-bye and a lot of success in the new shop.

SAN DIEGO CHAPTER

San Diego, Calif., June 14—The meeting of the San Diego Chapter was held at the Anderson Building, 209 West "E" Street. A "Spaghetti and Meat Balls" dinner was served preceding the meeting in "Chow Line" style with all members furnishing their own eating utensils. After gorging themselves, the members proceeded to the meeting room for the business session.

Applications of three new members were voted upon and approved. Two more applications were read and turned over to the



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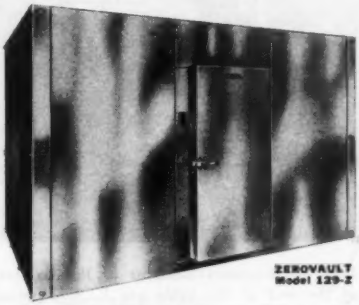

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WILSON CABINET COMPANY SMYRNA DELAWARE

Membership Committee for investigation and report at the next regular meeting. The City Code and Ordinance Committee reported progress being made. The Rules and By-Laws Committee reported their progress to date on a set of Local Chapter By-Laws. A discussion was held on this subject and the ideas presented were turned over to the Committee.

A motion was made and approved to change the regular meeting night from the second Thursday to the third Thursday of each month. An open forum followed.

ST. LOUIS CHAPTER

St. Louis, Missouri, May 16—Our monthly meeting at Herman's Place was called to order by President Adolph Braun, who introduced Mr. Carl Olin of Servel, Inc., Evansville, Indiana. Mr. Olin had a very informative talk and film on the new Supermatic unit which was thoroughly enjoyed by all.

The business of the evening consisted of passing a motion to make Tuesday the official day for meeting. Discussion regarding the family picnic was concluded by selecting members Roland Vizgird and Ernie Plesskott to make further investigations. Member Richard Bland was asked to assist in securing interesting programs for future meetings.

As the refrigeration and air-conditioning extracts of the new St. Louis Building Code were still unavailable, the meeting was closed with the serving of beer and sandwiches for refreshment. Attendance was 45 with two visitors.

BIRMINGHAM CHAPTER

Birmingham, Ala., May 25—This meeting opened with a "Southern-fried Chicken Dinner." After the fine dinner the meeting was opened and turned over to E. A. Summer, regional director, who presented the charter. Following the charter presentation, the members elected officers as follows: W. C. Kent, *President;* F. L. Corbin, *Vice President;* W. Stewart, *Secretary;* W. C. Hereford, *Treasurer;* E V. Oakwood, *Educational Chairman.* Mrs. Robert Gennett was then appointed to head the entertainment committee for the Chapter.

The Chapter was honored by a delegation of ten members from Montgomery Chapter as guests.

Ladies Auxiliary

TWIN CITIES AUXILIARY

Minneapolis, Minn., June 5—The members at this meeting decided to give two $5.00 gift certificates as prizes for the Twin Cities Chapter picnic. The next meeting was arranged as a luncheon to be held at the home of Mrs. Hoppenrath. At the close of the meeting, a social hour followed with the door prize going to Mrs. Otto Chermak.

KANSAS CITY AUXILIARY

Kansas City, Mo., May 2—At this meeting, a picnic was arranged to be held in Swope Park. Refreshments were to be furnished by the Auxiliary and each was to bring lunch. The remainder of the evening was devoted to playing bingo.

Members of Birmingham Chapter and their guests from Montgomery Chapter at the banquet meeting when the Charter was presented. Seated at the end of the table are E. A. Summer, R.S.E.S. regional director and Mrs. Robert Gennett, head of Refrigeration Supplies Distributor.

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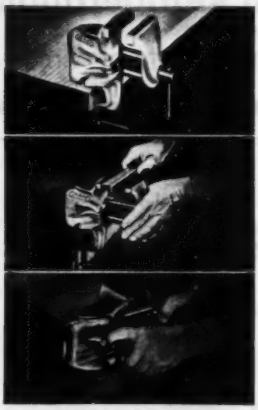
New and Improved Appliances

Information contained in this department is furnished by the manufacturer of the article described and is not to be construed as the opinion of the Editor.

New Machinist's Vise

THE Grand 3-inch Quikcet alloy-steel machinist's vise is manually operated but eliminates running in or out the screw to close or open the vise. It is claimed that this new speed vise can be set and closed in a jiffy by simply pushing on body of the free jaw, which slides in swiftly

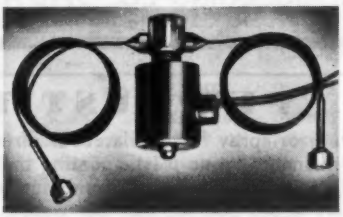


New Machinist's Vise

on ratchet screw and two precision guide rods and tightens with a turn of the handle. The vise is equipped with a trigger release pawl with ¾ inch of thread which holds the hardened screw under spring tension. Vise is said to open instantly to full 3 inches by pressure of thumb or finger on trigger release after tension has been eased by single turn of the loose-proof handle. The Quikcet vise is then said to be ready, without further adjustment, for instant closing on any other work.

New Pilot Control

FLOCHECK, a pilot control for condensing pressure water regulators and operating upon an entirely new principle, starts and stops the water with the compressor. Flocheck, according to the manufacturer, Flow Controls, Inc., 1821 W. North Ave., Chicago 22, stops water leakage, valve seat wear, high condensing pressures, hair trigger water cut-off adjustments, and free service calls. It is not necessary to carry high condensing pressures in order for the automatic water valve to close off.



Flocheck, New Pilot Control Made by Flow Controls Inc.

Flocheck mounts directly upon the present water regulator and is wired in parallel with the compressor motor circuit. One capillary tube connects to the low pressure side of the system and the other capillary tube connects to the high pressure side of the system.

During compressor operation, the automatic water valve is under the influence of the high side pressure and during the compressor shutdown the automatic water valve is under the influence of the low-side pressure; therefore, the water valve does not operate with the present low speeds, of on and off, which may produce sticking, valve seat wear, and finally erosion leakage. The water flow starts and stops with the compressor although automatically regulated while the compressor is in operation.

Portable Recording Thermometers Again Available

SUSPENDED from the line for some time to permit mass production of more standard instruments for the war effort, the Taylor portable recording thermometer is now back on the market. This self-contained unit is a standard Taylor recorder except for the special temperature measuring system and the sturdy feet and carrying handle which have been added. It is made by Taylor Instrument Co., Rochester, N. Y.

Units are now available with numerous standard chart ranges within the following temperature limits: mercury-actuated instant, minus 38° to plus 200° F. or equivalent C.; vapor-actuated, 0° to plus 300° F. or equivalent C. The instrument weighs 18 pounds and measures 20¼ in. high, 13¾ in. wide, and 6¾ in. deep.

Hydraulic Packing

A HYDRAULIC packing that does away with extrusion damage has been developed by The Weatherhead Co., 300 E. 131st St., Cleveland, Ohio. It consists of a resilient sealing ring of synthetic rubber in a T section, backed up or supported on the side by two non-extrusion ring retainers or guards. Full details are given in a new 8-page catalog available upon request.

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AVIATION CORP. BUYS CONTROLLING INTEREST IN CROSLEY CORP.

THE purchase of controlling interest in Crosley Corp. in Cincinnati, manufacturers of the Crosley refrigerator and other products, is announced by Victor Emanuel, chairman, and Irving B. Babcock, president of Aviation Corp. Approximately 64 per cent of Crosley's 545,800 shares outstanding was purchased from Powell Crosley, Jr., and the Crosley family for $39 a share, cash. The same offer was made to the minority stockholders. The shares purchased and the offer to minority stockholders involved approximately $22,000,000, which will be provided through a bank credit, with ten banks participating.

Aviation Corp. is a holding company with investments in a widely diversified list of companies. The Crosley purchase is expected to improve its position in the home appliance field. The Crosley line consists of a wide range of household equipment, including refrigerators, radios, kitchen sinks and cabinets, and electric ranges.

In Cincinnati, Powell Crosley said the decision to sell was based upon personal considerations, one of which was his desire to concentrate on the manufacture of the Crosley automobile. A new company will be organized to produce and sell the car and Aviation Corp. will assume control of all Crosley Corp. assets except the car.

NEW BEN-HUR DISTRIBUTORS

THE appointment of nine new distributors for their postwar line of "Ben Hur" farm and home freezers has been announced by the Ben Hur Manufacturing Co. of Milwaukee, Wisc., as follows:

RCA Victor Distributing Corp., 445 N. Lake Shore Drive, Chicago 11, Ill.

RCA Victor Distributing Corp., 1422 Grand Avenue, Kansas City, Mo.

Peden Iron & Steel Co., P. O. Box 1891, Houston 1, Texas.

John Pritzlaff Hardware Co., 333 N. Plankinton Avenue, Milwaukee, Wisc.

The Toledo Merchandise Company, 31-35 S. Superior Street, Toledo 3, Ohio.

Suttle Equipment Co., Lawrenceville, Ill.

Crest Corporation, 301 S. Vandeventer Avenue, St. Louis 10, Mo.

Stauffer, Eshleman & Co., Ltd., New Orleans, La.

Peerless Electric Supply Co., 122 S. Meridian Street, Indianapolis, Ind.

NEW DATA BOOK ISSUED ON COMMUTATORS AND SLIP RINGS

ENGINEERS, Purchasing Agents, Electric Motor Maintenance Men will be interested in the information and data given in the new catalog being distributed by The Toledo Standard Commutator Co., Toledo, Ohio, and the Homer Commutator Corp. of Cleveland.

From 15 basic types—over 3000 variations of Commutators and Slip Rings are listed in this book. Many of these can be supplied from stock.

The three associated companies, Toledo Standard Commutator Company of Toledo, Homer Commutator Corp. of Cleveland, Hillsdale Commutator Company of Hillsdale, Michigan, are the nation's largest exclusive manufacturers of quality Commutators and Slip Rings. They have produced more than 15 million units since Pearl Harbor. A copy of the book will be sent on request.

HONEYWELL WORKERS WIN E AWARD

WORKERS of Minneapolis-Honeywell Regulator Company have been informed by Robert P. Patterson, Under-Secretary of War that they have been awarded their fifth Army-Navy "E" award for excellency in war production. The Honeywell organization, first in the Chicago Ordnance district to receive the award in August 1942, is also the first to win five awards in the same district. It is one of the few companies flying an "E" pennant containing four stars. Its Philadelphia industrial instrument division, Brown Instrument Company, has won the "E" award four times.

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HOFFMAN CHAIRMAN OF MIDWEST SUPPLY JOBBERS

AT A recent meeting of the Midwest Supply Jobbers Association, Harry Hoffman, Hoffman Supply Co., Springfield, Mo., was elected chairman. Others elected were: G. F. Wickman, Wickman Supply Co., Lincoln, Nebr., vice chairman; Frank R. Pond, Refrigeration & Industrial Supply Co., Inc., Minneapolis, Minn., secretary.

Over 45 manufacturers representatives, jobbers or their representatives met at Davenport, Iowa, to transact business of the Association and elect the new officers.

CLEVELAND COUNCIL HEAD DIES

GLENN B. PRINGEY, president of the Cleveland Refrigeration Council, died recently. Mr. Pringey was the founder of Lighthouse, Inc., a refrigeration and air conditioning firm in Cleveland. He started in the refrigeration business 27 years ago in Illinois, later moving to Indiana for some time before establishing his business in Cleveland. His activity in the Refrigeration Council was of great assistance in keeping refrigeration servicemen available for critical maintenance work in his local area.

DEEPFREEZE DIVISION ANNOUNCES DISTRIBUTION POLICY

THE Deepfreeze Division of Motor Products Corporation has announced an established policy on the distribution of Deepfreeze home freezer cabinets according to F. F. Duggan, general sales manager.

Independent specialty distributors will be selected, based on their ability to serve their territory and located at accepted distribution points. Appointments of distributors throughout the United States and Canada have practically been completed, according to Mr. Duggan.

DOUCET, THORNDIKE PROMOTED

PROMOTION of E. J. Doucet from general sales manager to vice president and general sales manager, and K. B. Thorndike from manager of western regional office to vice president, western regional office has been announced by C. H. Hodges, Jr., president of Detroit Lubricator Co. Mr. Doucet will headquarter at Detroit and Mr. Thorndike will continue to maintain regional office headquarters in Chicago.

ALCO HANDBOOKS AID ARMY-NAVY TRAINING

A SUBSTANTIAL contribution to refrigeration's part in the successful prosecution of the war has been made by the "Handbook of Automatic Refrigerant Control," published by the Alco Valve Co., St. Louis.

Originally issued in 1940 to sell for 50c a copy, more than 10,000 copies have now been distributed free of cost to members of the armed forces and to the refrigeration schools organized to instruct army, navy and maritime personnel during the war years.

This 68-page, pocket-size handbook of information and data for the commercial refrigeration and air conditioning contractor, dealer and service engineer does not attempt to treat the whole broad subject of refrigeration but instead emphasizes the control of refrigerant in the system. Terms, definitions and discussions have been put into the simplest, least technical language possible. The book was not intended as a substitute for the fine technical reference works available to the industry but as a handy guide on a specific subject.

Practically out of general circulation for about three years, this handbook is again available for distribution.

MILLS ADDS TO SALES DEPARTMENT

STERLING SMITH, Manager, Refrigeration Division of Mills Industries, Incorporated, Chicago, announced two personnel appointments this month. Harrison H. Hedrick, his former assistant has been promoted to Manager of Distributor Sales. In another move to strengthen Mills position in the Refrigeration field, Mr. Smith has appointed Matt Hogan to assist Mr. Hedrick. Mr. Hogan was formerly manager of commercial sales division, Metropolitan Chicago Area, for Westinghouse Electric Company.

SEIBERT COMPLETES 20TH YEAR WITH KELVINATOR

E. A. SEIBERT, director of service of the Kelvinator Division of Nash-Kelvinator Corporation, has completed two decades on the same job with the corporation. His twentieth anniversary was observed by officials at a luncheon. Widely known in the refrigeration service field, Seibert joined Kelvinator June 25, 1925.

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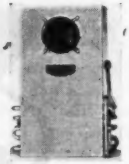

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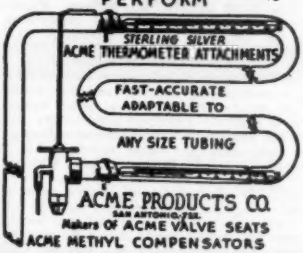

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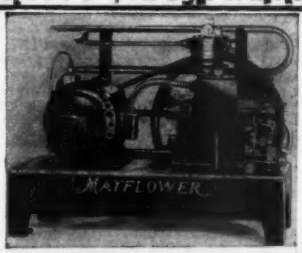

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